THE

Practical Teacher

A MONTHLY EDUCATIONAL JOURNAL.

Edited by JOSEPH HUGHES.

'Knowledge is proud that he has learned so much,
Wisdom is humble that he knows no more.'—COWPER.

VOL. IX. No. 9. NOVEMBER, 1889. PRICE, 6D. POST FREE, 7½D.

How to Teach School Children to Sing from Notes.

BY W. G. McNAUGHT,

Associate of The Royal Academy of Music.

DIVISION IV.—STANDARD V. AND UPWARDS.

207. It has been repeatedly urged in these lessons that teachers should not confine their teaching to the points of time and tune specifically mentioned in the Code requirements. A very wide distinction must always be drawn between what it is reasonable to expect to be sung at sight and what, if too difficult for sight reading, should, at least, be performed with an intelligent appreciation of the necessary connection between notation and musical effect. The requirements ask merely for what school children generally should be expected to sing at sight, and make no mention of tonal and rhythmic effects that are frequently met with in day- and Sunday-school tunes and popular songs, and are readily picked up by children. It would have been reasonable if the requirements for the higher Divisions had demanded proofs of familiarity with many other common things in time and tune. It is, probably, because a course that includes no more than what can be sung at sight is felt to be narrow and insufficient that H. M. Inspectors (as these columns again and again bear witness) sometimes apply tests to the various Divisions in advance of the Code requirements. Such tests are, however, no hardship to large town schools, where ample teaching appliances and skilled teaching produce results that teachers and scholars are justly proud to submit to H. M. Inspectors. For the present, at least, it seems expedient, in the interests of school music generally, that the Code requirements should not be increased in difficulty, because it is important to encourage the 20,820 small school departments where ear singing alone is practised to attempt a more rational course. It would be a grievous matter if, in coaxing the village schools to teach note singing, the more favourably circumstanced town schools are tempted to abandon the high aims and excellent results that have won for our school singing a great reputation. The application of comparatively severe tests is, therefore, a recognition of ability and earnestness, and in many cases a wholesome stimulant to laggards. As it has yet to be shown that schools have failed because such tests are inadequately performed, there is not much scope for complaint.

208. Even for the purpose of teaching school songs by notation it is necessary to teach some chromatic tones, some comparatively difficult ways of changing key, and some rhythmic divisions not hitherto mentioned in this course. It is possible to profitably place these topics before the intelligent pupils of upper Divisions without an elaboration of detail that would occupy more time than can be spared for singing lessons in schools. It is the attempt to teach theory too minutely that absorbs valuable time. Some theory, of course, must be taught, but in the first place let the lessons be as practical and incisive as they can be made, and then interest is easily maintained, and the points taught are assimilated.

209. As to chromatic tones, the teacher should be well acquainted with their commonest uses, so as to avoid wasting time in endeavouring to teach difficulties that should not be thrust upon school children at all. The terms diatonic and chromatic should be explained. The diatonic tones are **d r m f s l t**. A chromatic may for all practical purposes be defined as a tone about midway between any two diatonics that are separated by a full step. It is true that a chromatic *name* is often merely the imperfect naming of a diatonic of another key (as when **s fe s** are written for **'d t, d**), but as the precise definition of a chromatic opens up many difficulties, it is sufficient for all working purposes to regard as a chromatic any tone associated with a chromatic name. Names for chromatics are framed so as to show their contiguity to diatonics. As a general rule tones leading upwards are named from the diatonic below, and are called sharp chromatics, and tones leading downward are named from the diatonic above and are called flat chromatics. Sharp chromatics are named by adding the vowel 'e' to the initial of the diatonic *below*—

d de — r re — f fe — s se — l le

and flat chromatics by adding 'a' (pronounced as *au* in *Paul*) to the initial letter of the note *above*—

t ta — l la — m ma — r ra

210. As the object of a composer in writing a chromatic is to express a tone between the full steps of the scale, the need for **me** and **te** sharp, and **fah** and **doh** flat, can never arise. Then as, for reasons connected with harmony, **soh** flat does not occur, and **ray** flat is seldom used, there are but three flats, **ma, la** and **ta** that are likely to occur. Of the five sharp chromatics **le** is seldom used, so only **de, re, fe** and **se** need be specially studied. Where there are two names for practically the same sound (as **re** and **ma**, and **se** and **la**), the choice of chromatic name is generally, but not invariably, governed by the note that follows.

BRITISH MUSEUM

211. The plans for awakening attention to new tones that were fully described in the early sections of these lessons will be found useful in introducing chromatic tones. Thus, the teacher designing to teach **de** asks the class to listen to the following phrase (which may be written on the board)—

*
d m s m r d r

which he vocalises as written. He then asks the class to discover where an alteration is made when he sings for the second time. **De** being substituted for **d** at * the new tone, if discovered, should be properly named, and the whole phrase as it was originally, and as altered, should be sung by the class.

212. The sharp chromatics are easy to sing when they are approached from and lead to the note *above* after the model of **s fe s**. The following exercise is a useful introduction to all the sharp chromatics. It should be patterned in sections and finally committed to memory.

Doh as C or D.

d	:t_1	:d	r	:de	:r	m	:re	:m
f	:m	:f	s	:fe	:s	l	:se	:l
t	:le	:t	d^1	:s	:m	d	:—	:—

213. **De** and **re** should be studied separately. When pointing modulator voluntaries including **de**, prefer to use **f** rather than **fe** in close connection. The proper effect of **de** is dependent upon the **f** being retained in the memory.

Exercise on **de**.

Doh as F or G.

m	:s	d	:r	m	:r	de	:r	m	:s	f	:m	r	:de	r	:-
r	:r	m	:f	l	:s	f	:m	r	:de	r	:f	m	:r	d	:-

It is difficult to sing **doh** soon after **de**.

Exercise.

Doh as D or E♭.

s	:d^1	t	:l	s	:m	m	:r	de	:r	de	:r	m	:r	r	:d
m	:s	f	:m	l	:d^1	f	:l	s	:m	r	:de	r	:m	d	:-

Exercise on **re**.

Key G.

s_1	:m	r	:d	d	:t_1	l_1	:s_1	m	:re	m	:s	f	:m	r	:-
r	:m	f	:t_1	m	:re	m	:d	s_1	:s	f	:m	m	:r	d	:-

Sometimes **re** is written in close association with **fe**. It is then really **se** in the first column to the right. The difficult-looking phrase—

s fe m re m

should be patterned on the modulator from—

*d t_1 l_1 se_1 l_1

of the side column. The well-known hymn tune by Spohr capitally illustrates the commonest uses of **de** and **re** in association with **fe**.

:s_1	m	:-	:m	s	:-	:d	m	:-	:r	d	:-
:s	l	:s	:m	f	:-	:s	m	:-			
:m	r	:-	:de	r	:-	:m	f	:-	:l	s	:-
:f	m	:re	:m	s	:-	:fe	m	:-			
:s_1	m	:-	:m	s	:-	:d	m	:-	:r	d	:-
:s	l	:s	:m	f	:-	:t_1	d	:-			

214. The flat chromatics present a good deal more difficulty than the sharp chromatics. **Ta** has already been fully dealt with. **Me** flat (**ma**) is generally approached from **r**, **d** or **f**, and quitted on **r**. The gloomy mental effect of **ma** is very striking, and may be most usefully dwelt upon in order to fix the association of sound and name. The leap **d** to **ma** brings out this effect most clearly.

Illustration of the effect of **ma**.

d	:m	s	:m	d	:-	ma	:-	r :-

Exercises on **ma**.

(1) Doh as F.

d	:t_1	:d	r	:ma	:r	m	:r	:d	r	:-	:-
m	:f	:s	r	:ma	:r	m	:m	:r	d	:-	:-

(2) Doh as G.

m	:-	d	:-	m	:r	d	:-	ma	:-	ma	:-	r	:-	-	:-
s	:-	f	:m	r	:m	d	:r	ma	:r	m	:r	d	:-	-	:-

(3) Doh as F.

s	:f	:m	m	:r	:d	r	:r	:ma	r	:-	.m	:f
s	:f	:m	f	:ma	:r	m.f	:s	:m	r	:r	.m	:d

215. **Lah** flat (**la**) is generally preceded and followed by **s**, *e.g.*, **s la s**. The mental effect of **la** is gloomier even than **ma**. The sad **lah** by contrast becomes bright and cheerful.

Illustration of the effect of **la**.

Doh as E♭. M. 100.

d	:-	:-	d	:t_1	:d	s	:-	:-	s	:-	:-
la	:-	:-	la	:-	:la	s	:-	:-	-	:-	:s
l	:-	:-	t	:-	:-	d^1	:s	:m	s	:-	:s
la	:-	:s	l	:-	:s	d	:-	:-	-	:-	:-

Exercises on **la**.

Doh as D.

s	:m	d	:m	s	:s	la	:s	s	:s	l	:t
d^1	:s	f	:m	m	:f	s	:s	la	:s	d	:-

It is always difficult to sing **m** in tune if **la** is prominently placed a few notes before.

Doh as E♭.

s	:f	:m	r	:-	:m	f	:s	:la	la	:-	:s
f	:-	:m	m	:r	:d	r.m	:f	:t_1	d	:-	:-

Doh as F.

s	:la	s	:f	m	:f	s	:-	la	:-	s	:f	m	:r	d	:-

(To be continued.)

Practical Kindergarten Lessons for English Elementary Schools.

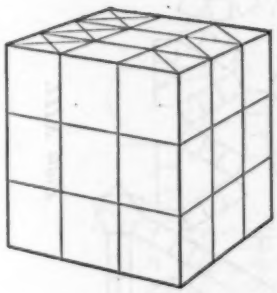
BY MRS. MORTIMER.

Lecturer at the Home and Colonial Training College.

IX.

GIFT V.

EXAMPLES OF LESSONS.



This consists of a three inch cube cut twice in each direction thus forming 27 cubes, each of which is of the same dimensions as the cubes in Gift III. Three of the cubes are divided diagonally into halves, and three into quarters. These divisions with the 21 whole cubes produce 39 pieces. It will thus be seen that this Gift is a development of Gift III. and introduces to the children not only a greater number of pieces, but fresh shapes formed by the slanting line; thus we have the sloping surface, the acute angle, &c. The first practice with Gift V. is like that with the preceding ones. The new cube should be compared with the former ones. The children will readily notice that it is much larger and that it is divided in a different way. The examination of the new features will be a source of great pleasure to them, and the teacher will have no difficulty in drawing their attention to the half and quarter cubes, the slanting line, and the acute angles. When the children commence building they will readily discover that, in addition to the various forms with which they are familiar, owing to Gift III., there are numerous additional forms which they can now make, and churches and houses with roofs, bridges, arches, will soon form subjects for conversation with the teacher. (Plate XI.)

Forms of Knowledge. These are similar to those made with the Third and Fourth Gifts, but we now get the further division into thirds, ninths, &c., which give still greater facilities for teaching *number* so that in addition to repeating the number lessons given with the other Gifts, the teacher is able to make considerable advance in this subject, and with more advanced pupils fractions can be introduced. Many Geometrical forms may be made, and the children thus become familiar with the following terms:—Squares, triangles, rhombs, square and triangular prisms, oblique lines, etc. (Plates XIV and XV.)

Forms of Beauty. These are both numerous and elaborate. In addition to the square formations, (Plate XII.) we have now those worked on triangular forms. (Plate XIII.)

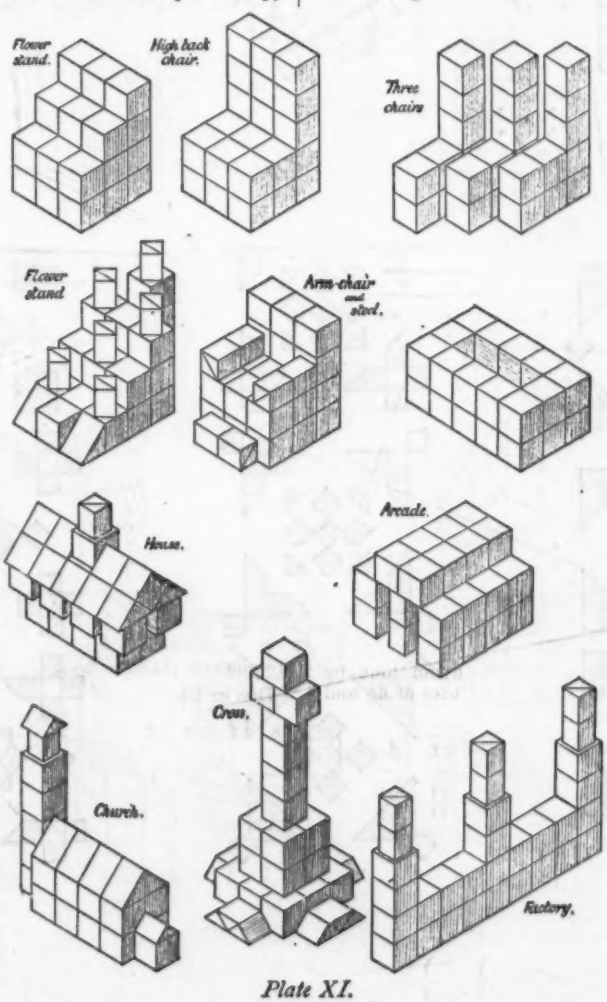


Plate XI.

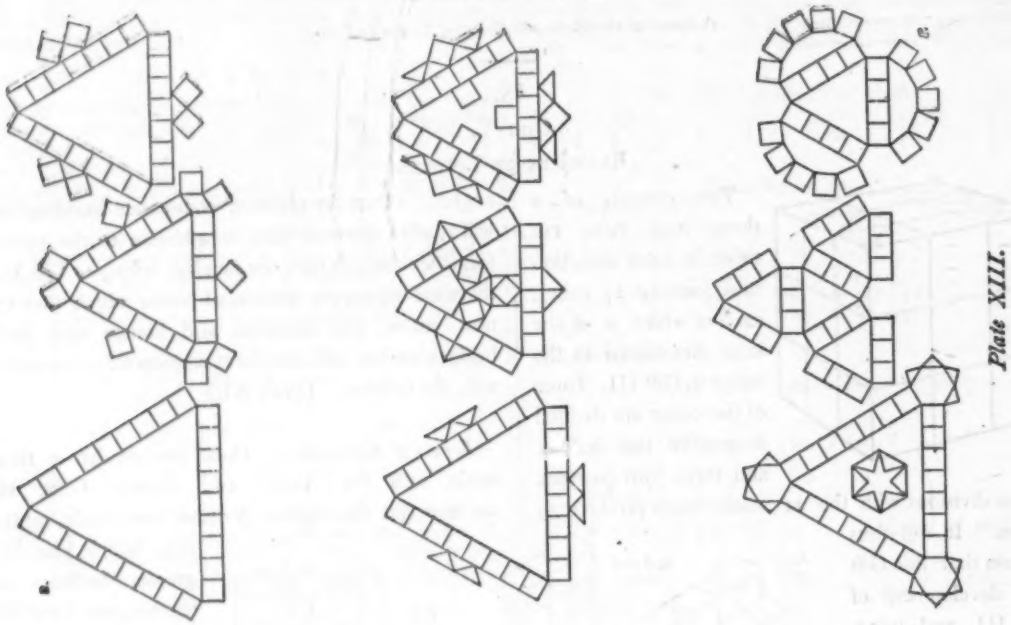


Plate XIII.

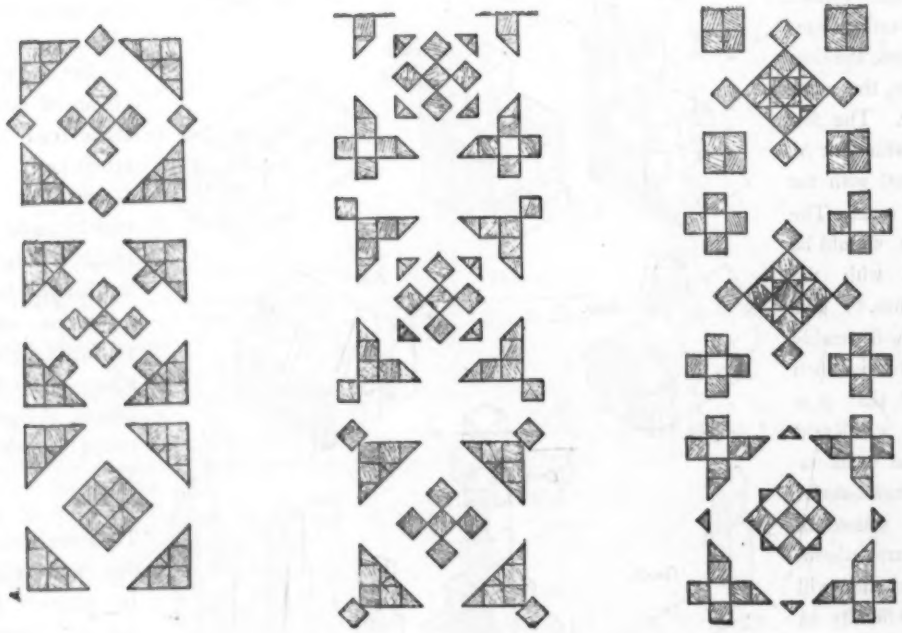
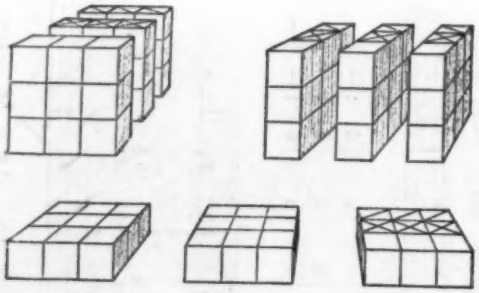
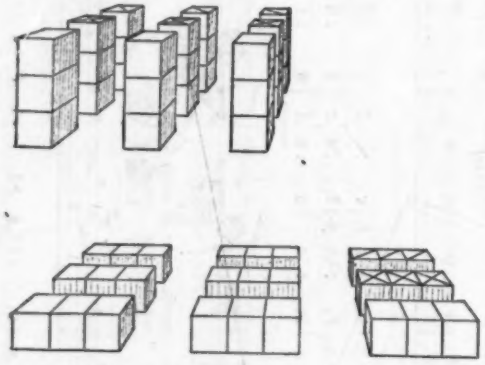


Plate XII.

A. *Into thirds.*



B. *Into ninths*



C. *Into twenty-sevenths.*

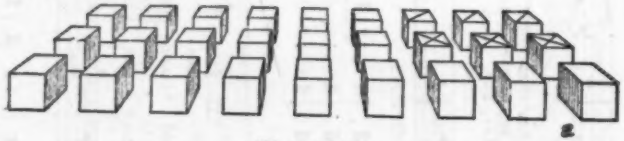
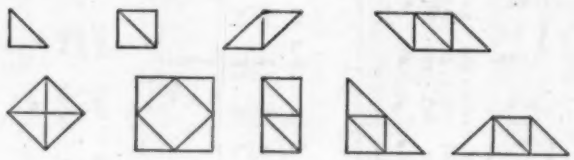


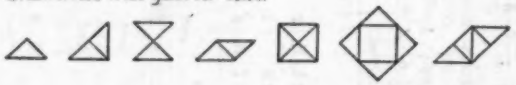
Plate XIV.

A. *Group the parts.*

B. *Exercise with half-cube.*

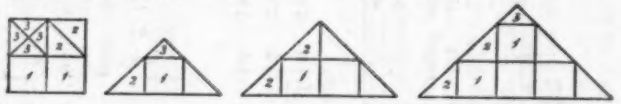


C. *Exercise with quarter-cube.*



D. *Exercise with cube – a repetition of Gift III.*

E. *Combination of parts.*



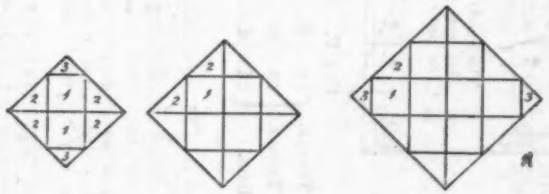
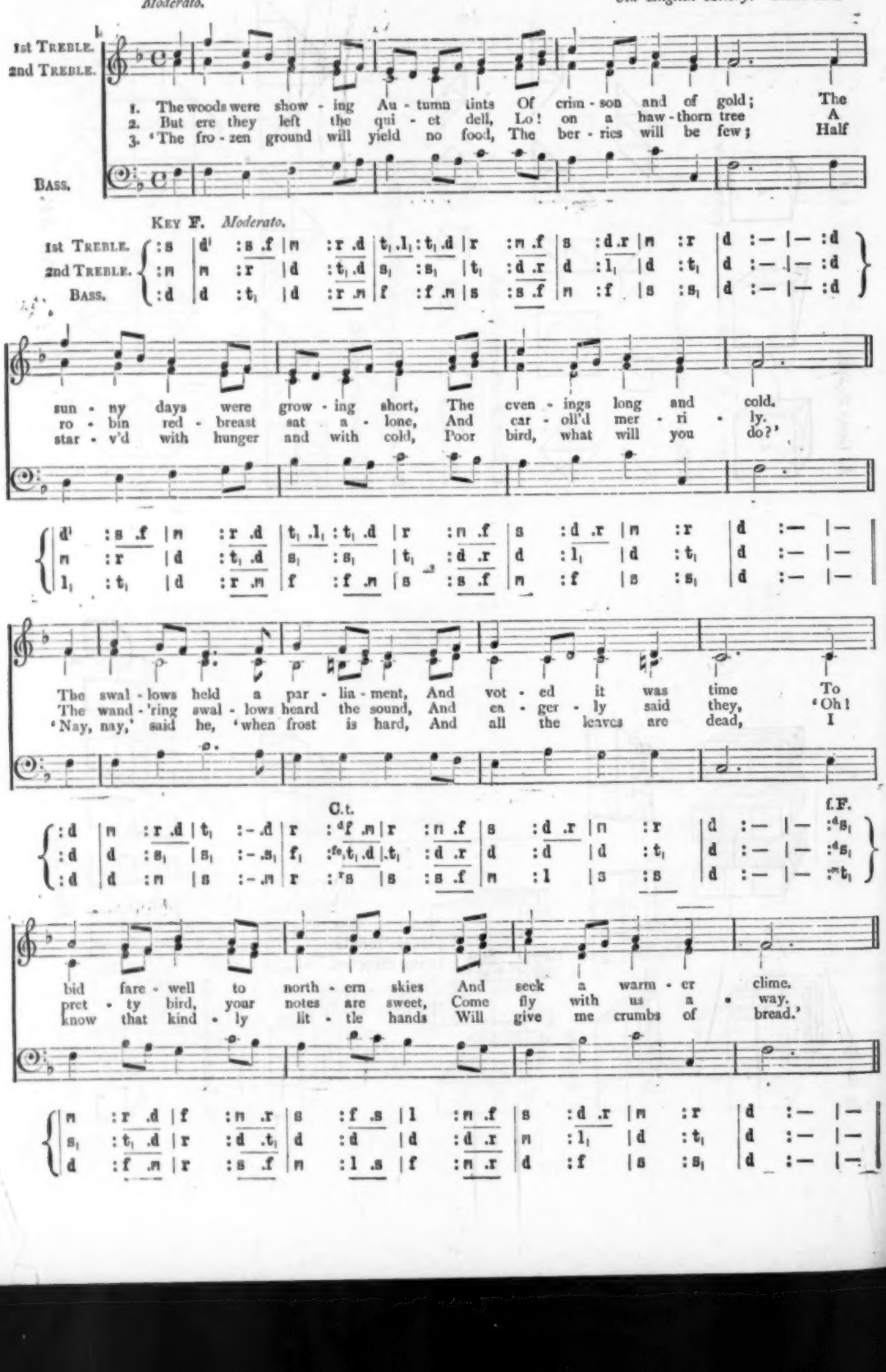


Plate XV.

THE SWALLOWS AND THE ROBIN.

Moderato. *Old English Melody.—Skene MS.*

1st TREBLE.
2nd TREBLE.
BASS.
1. The woods were show - ing Au - tumn tints Of crim - son and of gold; The
2. But ere they left the qui - et dell, Lo! on a haw - thorn tree A
3. 'The fro - zen ground will yield no food, The ber - ries will be few; Half
KEY F. Moderato.
sun - ny days were grow - ing short, The even - ings long and cold.
ro - bin red - breast sat a - lone, And car - oll'd mer - ri - ly.
star - v'd with hunger and with cold, Poor bird, what will you do?'
The swal - lows held a par - lia - ment, And vot - ed it was time To
The wand - 'ring swal - lows heard the sound, And ea - ger - ly said they, 'Oh!
'Nay, nay,' said he, 'when frost is hard, And all the leaves are dead, I
C.t.
f.F.
bid fare - well to north - ern skies And seek a warm - er clime.
pret - ty bird, your notes are sweet, Come fly with us a - way.
know that kind - ly lit - tle hands Will give me crumbs of bread.'

How a Scotch School was Examined.

Music.—Infants and Standard I. were taken together—Inspector pointed an exercise on the Modulator similar to the following :—

Key C.—**d r m f s l t d' s m d m f s l s f m r d t, d.**

Children imitated such phrrses as **l s f m—r f l s—d' l r s,** sung by teacher.

One song taken.—'The Old Black Cat.'

STANDARDS II. AND III.

Modulator Exercise :—Key C. **d' l s fe s r s m s l m r l d f l t s r s m d f l s fe s.**

Ear Exercise :—**d r m—f s l—l t d'—d' s m—r m f.**

One song taken.—'Ye Banks and Braes O' bonnie Doon.'

STANDARDS IV. TO VI. AND OTHERS.

Modulator Exercise :—Key C. **d r m fe s l se l d' t l d' ta l s f fe s r l s d t, l, d l s,** &c.

Ear Exercises on Harmonium :—**d f r m—r f l s—s d' t l—s r s m.**

Sight Singing :—Key G.

| m : l | se : l | f : - | m : d | d : l, | - : t, | r : - | f : m |

| m : f | r : t, | d : l, | se : l, | t, : - | r : f | m : d | l, : - ‖

One song taken in three parts :—'Cold the blast may blow.'

INFANT CLASS.

Reading.—One line each from Blackie's Century Primer' for the lowest or youngest classes, and a sentence from Infant Reader of the same series for the highest class.

Writing.—Aa, Bb, Cc, Dd, for the youngest, and L O N D O N, l o n d o n for the others.

Arithmetic.—1 + 8? 2 + 9? 3 + 8? 1 from 8? 2 from 9? 3 from 8? for the lower; with more difficult mental work for the higher portion.

Intelligence.—This was tested by a few questions founded on the matter in the lessons read.

Object Lesson.—'A piece of coal,' chosen from a list of four minerals, four vegetables, and four animals.

Sewing.—According to Schedule 3 for all the Standards.

STANDARD I.

Reading.—(Blackie's Century and Royal Star Readers.) Lesson taken, 'Story of a Blind Rat.' Each pupil read a sentence.

Intelligence from same lesson.—What is a sailor? strange conduct? blind? A word meaning 'not able to hear'? berth? Another word like that? &c.

Writing.—'The sailor was so struck by this strange conduct.'

Arithmetic.—Read in words :—

(1) 409 + 901 + 800 + 70 + 19.
(2) 987 + 67 + 789 + 946 + 777.
(3) From 950 take 653.

STANDARD II.

Reading.—(Blackie's Century and Royal Star Readers.)

Lesson taken from the former :—'Kitty's Robins,' and 'The Loving Boy.' Nouns and adjectives taken from the latter lesson.

Intelligence, very simple, from the first lesson read; *e.g.,* What is spring? Other seasons? Some other fruit trees besides the apple? What is a crumb? Another name for a sound besides chirp?

Dictation.—'You must not think that these crumbs of bread were their only food. The old bird went now and again about the garden.'

Arithmetic.—Read in words :

(1) 9070 + 7069 + 9008 + 987 + 977 + 9700 + 8563.
(2) From 9079 take 2396.
(3) Multiply 97,534,682 by 6 (read in figures).

Writing copies were submitted to the Inspector.

STANDARD III.

Reading.—(Blackie's Century and Royal Scottish Readers.) Lesson taken for boys from the former, and for girls from the latter. The boys, standing in a semi-circle round the Inspector, read the lesson on 'Owls,' page 102.

Intelligence and Grammar were tested from the lesson read. Analysis was taken from such sentences as—'Look at this sober-faced bird.' 'I will now tell you the chief kinds of owls.' 'The third kind is the barn owl,' &c. The verbs, nouns, adjectives and pronouns were selected from par. 7.

The girls were tested in a similar manner from Lesson 12 in Royal Scottish Reader.

Dictation.—'I saw him once take Ethel's work-basket, turn it over on the table, pick out the pins and bend them, break the needle, and put the balls of cotton in the fire. He carried the scissors off and hid them under a flower-pot. The thimble he filled with water.'

Arithmetic (on cards).

(1) Multiply seven hundred and eighty-seven thousand nine hundred and sixty-five by seven thousand and ninety-eight.
(2) Divide 9,345,678 by 397.
(3) Divide 135,674 by 48 (using factors).
(4) From £8,000 10s. take £95 18s. 7¾d.

History.—Wanderings of Bruce after the battle of Methven Wood, with the geography of the various places mentioned. Queen Mary's life previous to being crowned Queen of Scotland.

Geography.—Position of Scotland with regard to England and Ireland. Seas round it—names for parts of these seas. Islands on west coast. Rivers flowing east. Mountains north of the Caledonian Canal.

STANDARD IV.

Reading.—(Blackie's Century and Royal Scottish Readers.) All read from the former, 'The Real King,' page 81. Meanings of single words, as 'comrades,' 'menagerie,' &c., and phrases, as 'wide berth,' 'slinking away,' &c.

Grammar and Analysis taken from same lesson.

Parsing.—'At the head of the herd was a baby elephant.'

Dictation.—'She teaches them to walk, to climb, and to swim, and defends them with fury, even at the risk of her own life. But though she gives them many caresses, keeps them warm, licks them, and submits to all their teasing, yet she does not fail to punish them when she thinks they need punishment. A good blow with the foot, a box on the ear, and even a slight bite, are among the means of education.'

Arithmetic.—Specimen card.

(1) How many pints are there in 36 qrs. 3 pks. 2 qts.?

(2) Divide 24 years 290 days 9 hours 4 seconds by 58.

(3) Multiply £29 13s. 7½d. by 67.

(4) What must be added to £539 13s. 10¾d. to make £606 13s. 8¼d.?

History.—Civil War—leaders—battles—dates. The chief events under the Commonwealth, and causes that led to the Revolution of 1688.

Geography.—Physical features of Great Britain, with the openings in the coast from Land's End to John o'Groats.

STANDARD V.

Reading.—(Royal Star and Geographical Readers.) Lesson taken was 'The World's Fair,' Part I. A sentence was heard from each, then followed questions on meanings of words and phrases.

Grammar consisted of the parsing of words chosen in hap-hazard fashion by the Inspector.

Analysis of complex sentences was taken from parts of lesson which showed subordinate noun, adjective or adverb sentences.

Writing.—The following story was read twice:—

'One morning early in the spring a gentleman heard an unusual twittering sound outside the window of his bedroom. On looking up he saw hanging from the thatch two curious festoons, apparently in motion. On a closer examination he found that the two half-circles were composed of twenty or thirty little wrens, clinging to each other by foot and wing. The birds clung together thus for about two minutes, twittering mournfully all the while; then, suddenly, as if by one consent, they broke loose in a moment and flew away. On descending shortly afterwards the gentleman found a dead wren lying just under the window, over which the wrens had been hanging a few minutes before. The affectionate little creatures had been singing a dirge over their dead friend below. From that time the wrens deserted the locality for more than two years.'

Arithmetic.—Specimen card.

(1) Find by practice the price of 3,560 articles at £3 7s. 4½d. each.

(2) Make out a bill for:—

29 yards silk ribbon, at 1s. 11½d. per yard.
9 handkerchiefs, at 2s. 6d. per dozen.
4½ dozen collars, at 8d. per collar.
11 pairs of gloves, at 3s. 9½d. per pair.

(3) What quantity of tea at 3s. 4½d. per lb. must be given in exchange for 54 lbs. of coffee at 1s. 7½d. per lb.?

(4) Divide $5\frac{1}{2}$ by $7\frac{1}{3}$ and subtract the result from $9\frac{1}{8}$ of $1\frac{3}{5}$ of $\frac{40}{11}$.

Geography.—Taking Gibraltar as a starting point, a voyage was imagined, going round the north coast of the Mediterranean, taking the gulfs, seas, straits, islands, countries and seaports consecutively. Then the general geography of Canada occupied the class for about three minutes.

History.—Beginning with the parentage of George III., a general survey of his reign was taken, special attention being paid to the American War of Indepence—its cause and results, as also to the French Revolution—Napoleon, Nelson, and Wellington bulking largely in the examination.

STANDARD VI.

Reading.—(Royal Star and Royal Scottish Readers.) The lesson taken was 'The Dismounting of Long Tom,' meanings of words and phrases, with Grammar and Analysis as the questioning proceeded.

Essay.—'A Coal Mine,' or 'A Trip to Glasgow by Rail.'

Arithmetic.—Specimen card.

(1) What is the amount of £350 for 2½ years at 4 per cent.?

(2) Reduce ·01, ·36, and ·428571 to vulgar fractions in their lowest terms.

(3) If 500 men get £5 350·05 per week, what will one man get for 52·08 weeks?

(4) If £350 gain £91 in 6½ years, find the rate per cent. per annum.

History.—The Prime Ministers of the present reign. Wars: Russian, Indian and African.

Geography.—Geography of South America very minutely; also that of New Zealand.

Maps, on slates, of Africa, India and Australia.

Repetition in all the Standards was almost skimmed over, and the questions as to meaning were easy.

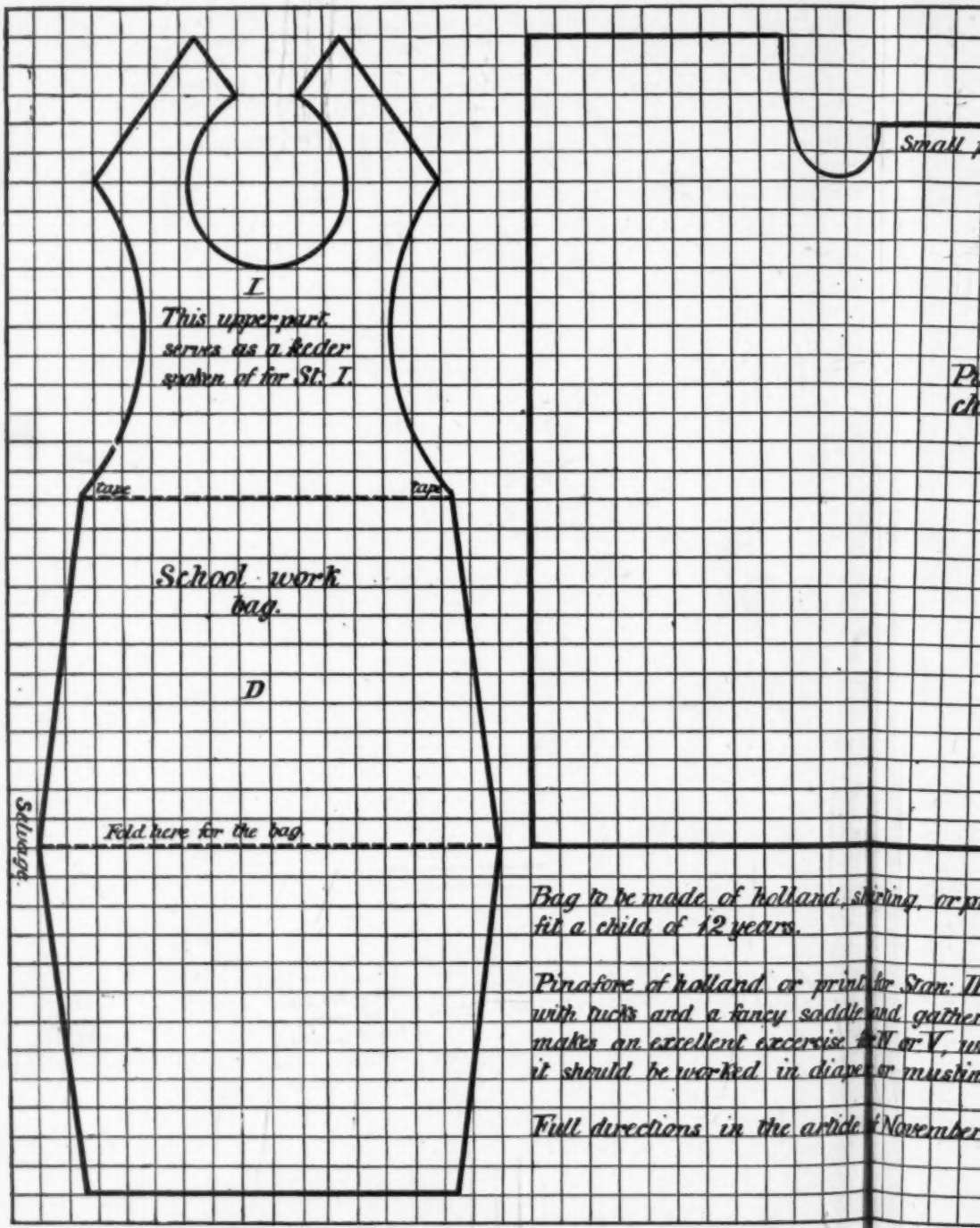
—o—

Practical Needlework in Elementary Schools.

BY MISS J. W. WARREN,

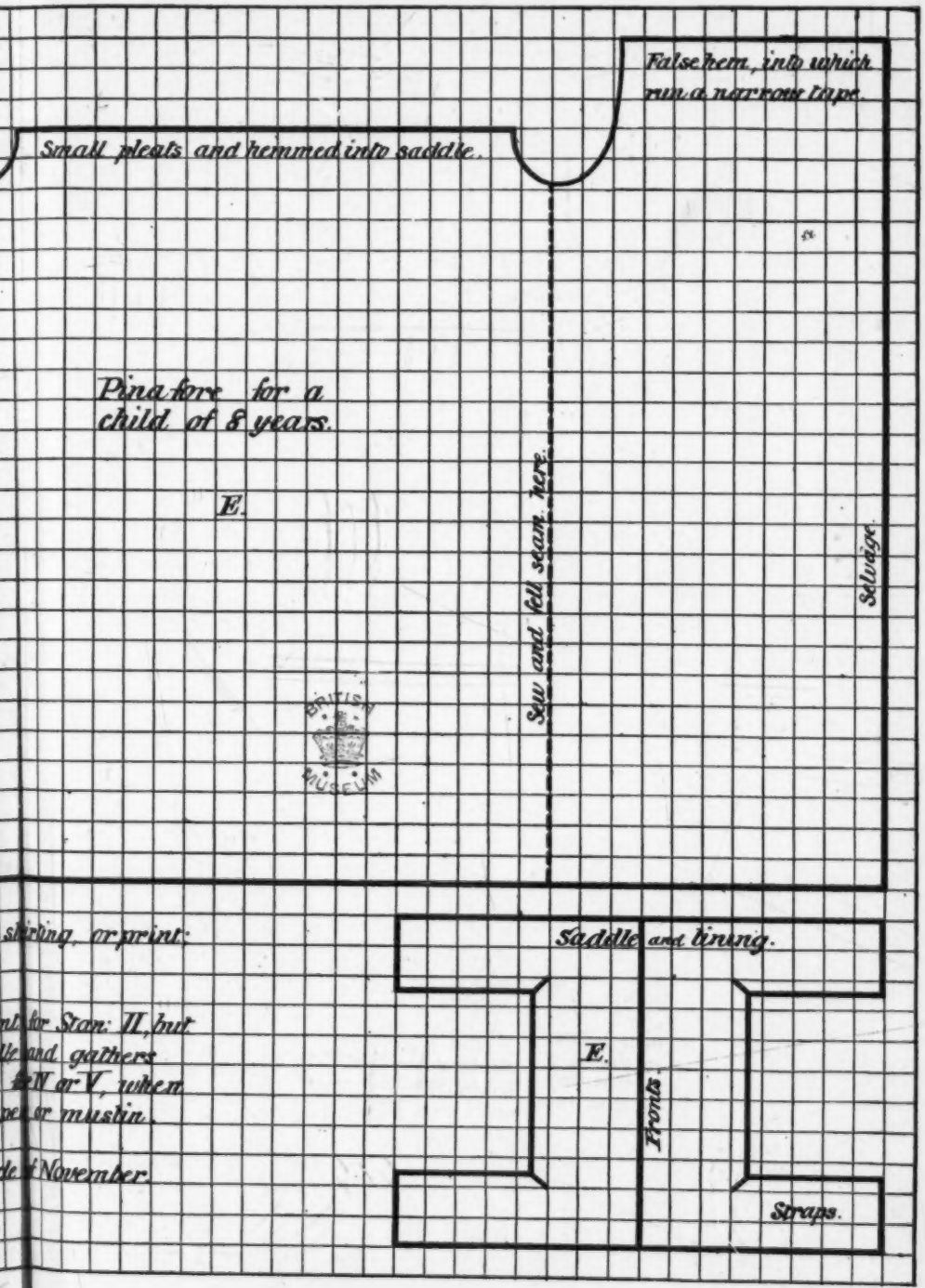
Inspectress of Needlework to the Leicester School Board.

WE have to consider now the garment work of the Second Standard. In point of fact it may be identical with that of the First Standard, but no teacher worth the name is satisfied with a dead level of attainment, and it is therefore necessary to search about for some change and a little advance. We shall therefore start by trying for a garment in which a fair amount of seaming and some useful hemming are found. We are somewhat fettered by the fact that few garments are made that can be done with so few stitches as have yet been taught. No attempt should be made to get any fine calico into this Standard. Let the material be


I
This upper part serves as a feeder spoken of for St. I.
tape
tape
School work bag.
D
Fold here for the bag
Selvage
Small
Bag to be made of holland, shirting, or
fit a child of 12 years.
Pinafore of holland or print for Stan: I
with tucks and a fancy saddle and gather
makes an excellent exercise for IV or V, w
it should be worked in diaper or muslin
Full directions in the article of November

'PRACTICAL NEEDLEWORK IN ELEMENTARY SCHOOLS.'

By Miss J. W. Warren.



BRITISH MUSEUM

...stering, or print:

...nt for Stan: II, but
...lle and gathers
... IV or V, when
...pe or muslin.

...de of November.

somewha
I., and y
able. I
these an
year or t
decidedl
thing I
lawn.
not so g
Choose
mistake

A few
suitable
ing Apr
mention

Now
simple p
cut from
first abo

A bal
widths
makes t
present
ing is fo
The sec
Standar
skirt.
would s
washing

The
so man
a larger
it, in wh
as after
but mu
hemmi
at all ;
is not t
and a l
tion in a
fault w
the arm
a glanc

The
but the
and mu
though
the lim
will not
of two
The di
sale of
to cut i
fore ar
cookin
quent

We
given i

The
in use,
width
three t
large n
skirt le

The
betwee
The se

somewhat stout, the implements as large as in Standard I., and you will succeed in getting something presentable. Babies' first shirts are sometimes tried, but these and white calico chemises may well be left for a year or two. Half scoured calico, holland, and print are decidedly nearer to the children's ability than any thing I can suggest, unless we include a good zephyr lawn. This last is not always alike; the plain ones are not so good to work upon as the checkered or spotted. Choose also real print, not a sateen that is sometimes mistaken for print.

A few of the garments that come to my mind as suitable are the following:—Pinafore, Chemise, Cooking Apron, Work Bag, Baby's Petticoat, and the things mentioned in Standard I.

Now of these, diagrams are given of a good fitting simple pinafore, a work bag, and also a child's feeder cut from the upper part of the work bag. Just a word first about the garments not given in the diagram.

A baby's petticoat can be made by two children; 1½ widths of half a yard deep, soft, half-bleached calico makes the skirt. The sew and fell seam, and placket, present the difficulty wanted, and the advanced hemming is found in the 1½ inch wide hem at the bottom. The second child makes the bodice given in the First Standard, smaller of course, and hems in the pleated skirt. This garment is difficult in name only, and would sell for 7d. or 8d.; being excellent wear and good washing it should find a ready sale.

The chemise is very general, and has been given in so many works of this sort that I refrain from it until a larger size can be chosen. However, some may take it, in which case limit yourself to the ages of 4, 5, 6, or 7, as after this time it will certainly not do to pleat into, but must of necessity be gathered. The custom of hemming the neck only is not in my opinion a good one at all; poor people will buy such things, but the habit is not to be encouraged. A good slope under the arm and a large enough armhole are points needing attention in a well cut chemise for children. It is a universal fault with young teachers to cut too small a hole for the arm. Practical women, like mothers, find this out at a glance, and will scarcely take them at a gift.

The cooking apron is made largely in some districts, but the seams on the bias are long and tedious and and much more suitable for a Third Standard exercise, though much ingenuity is displayed in bringing it within the limits of the requirements; and where other things will not sell it might be put in, when it should be made of two qualities—a loose, coarse holland and a fine one. The difference in price is considerable and ensures a sale of all. The bib should be sewn on. Attempts to cut it all in one as a sort of enlarged apron-pinafore are not as a rule satisfactory. A more elaborate cooking apron is reserved for a diagram in a subsequent Standard.

We will now consider in detail the sheet of patterns given in this month's magazine. There are three in all.

The pinafore will be found newer than some others in use, and exceedingly simple. In cutting it a suitable width material will enable you to get the side piece three times in every fourth yard, but when cutting a large number economy is secured by cutting several skirt lengths first, then supplying the saddles.

The width given is 40 inches, but any material between 30 and 36 inches may be used to advantage. The seam must be under the arm.

The length in front will be 23 inches. Where two inches are taken off for hem at back it should be 26. The difference is made up by the depth of the saddle.

The skirt in holland and plain prints; *two* out of every three pinafores can be so cut as to give a *selvage on each side at back*, which need not be hemmed. You therefore have in your skirt one and a third widths of material. Do not let a child fell the selvage. In making up, sew and fell first, then hem the bottom and put a narrow hem on the two back pieces, next hem the curved armhole and then fix several very small pleats meeting in the middle. All along the front tack these securely; do not trust to pins.

The saddle must now be done; it is very simple. Cut double selvage running across, slit each piece where you find the sloped line in diagram, fold in all round this width, seam together all round, leaving open only the part marked *fronts*. It is now ready to join to skirt which is hemmed in where pleated, and the straps seamed on each back. When complete put half a dozen buttonhole stitches in two front corners to strengthen them. It will be found a perfect fit if properly put together.

This pinafore can be made of the wide holland, in which case it must not be considered as a suitable exercise for Standard II., on account of the want of a sew and fell seam.

The work bag or apron is a most useful and suitable pattern; the neck part forms a good exercise in hemming, and is much neater than that so often used with a string to slip over the head; this one given should be buttoned at back. Forty inches of 32-inch material will cut two, which should then sell for about 4½d. each. The points at sides just below the waist should be secured by a strong tape, not to be tied at back *but slipped over the child's head*, about 18 inches long. The bottom hems should be an inch wide; this will throw the bag one inch below the taping line, the sides of bag to be made with a fell, not a seamed hem. The bag is made to fit a 2nd., 3rd. or 4th. Standard. If wanted for an average girl of 13 years, it must be enlarged at neck and dropped in the waist two inches.

Mode of work.—1st hem the bottom, this being the easiest straight hem. Next hem from the *point on side below waist line* round to neck point at the back; follow this by hemming the neck. You have now to see to the sew and fell seam, turning up the flap *upon it*. Make a small snip with the scissors to fell the edge for the single turn, see that the double turn is upon the apron part. The corners will need a teacher's care in fixing; they present the same difficulty as do those of the pillow-slip. If made in shirting or holland this bag is of course cut in one, the flap being folded up, but if in print, the bag part will be cut separately and fitted on. The hem at bottom should be made on the reverse side of those at sides and neck, to make right when turned up.

The shape of the bag is designed to keep the opening closed. Those in general use are straight at sides, and when worn gape open. The string being joined on either side will be found an improvement in neatness of finish, and in making for a class several children should be fitted and an average struck. The work bag should be loose at waist, and below only partially drawn by tape.

If possible, a II. Standard child should work with cotton 36, and the work I have given admits of this size.

Feeder.—The points below waist line indicating the bottom—which by the way should be longer by hem for this reason, it must be cut two inches below these points. This work can be done by the girls, who for various reasons are not able to do the more difficult work. I have spoken elsewhere of the uses of this garment and also the economy in cutting.

I must say a few words as to the management of large numbers. Usually the II. is one of the largest classes in a school, and though not very difficult in regard to subjects, is often overwhelming as to numbers. If you have the class alone, do not *attempt* all the garments at once; give a fourth or fifth, and let the rest do some exercise not needing your constant supervision. When your first consignment is fairly launched, start a second, so in time getting the whole class at work; then if difficulties crop up, put the first set by for a time. I have seen teachers rendered sleepless by the accumulation of obstacles that in themselves are mere child's play, but coming in battalions cannot be overcome.

Every curve or point, needs the teacher. Do not misunderstand me; she is to look to and watch, but not actually do, this work. She must not trust here to simultaneous explanation. It is an excellent thing in its way, but every practical needlewoman knows that it is capable of being abused. In a word, a careful planing will bring each child to her difficulties by herself. A good teacher will know the very quarter of an hour when such and such a child may arrive at point a, b, c d, e. Herein lies the art of teaching and success, and marks the difference between mere work and excellent work. '*With greater skill*' lies in a few well chosen materials and implements, suitable amount of work suitably introduced as to time, and attention to the points above enumerated.

The garment fixing should not be done by this Standard. Their specimens are sufficient in this respect; nor should the bulk of it be done in the school time during the work lesson.

(To be continued.)

—o—

Quarterly Arithmetical Tests.

STANDARD I.—FIRST QUARTER.

1. 4
192
37
6
508

2. 680
300

3. 574
21

4. 5 × 4;
12 × 2;
3 × 3.

SECOND QUARTER.

1. 53
9
624
785
16

2. 762
426

3. 837
250

4. 6 × 10;
9 × 3;
4 × 7.

THIRD QUARTER.

1. 417
36
850
9
703

2. 400
7

3. 358
259

4. 8 × 5;
4 × 12;
9 × 6.

STANDARD II.—FIRST QUARTER.

1. From 50,013 take 49,965.
2. 39 + 2,806 + 790 + 35,047 + 5 + 69,318.
3. 49,076 × 27.
4. A mile contains five thousand two hundred and eighty feet. How many feet are there in 15 miles?

SECOND QUARTER.

1. Multiply 9,580 by 904.
2. Take 78 from 10,004.
3. Divide thirty-five thousand and forty by five, and write the answer in words.
4. A boy had 39 marbles, and he bought some more at ten a penny. He gave 70 to his brother, and had 29 left. How many did he buy?

THIRD QUARTER.

1. 66,060 ÷ 9.
2. Multiply 38,605 by 380.
3. Subtract 8,642 from 80,310.
4. I had three thousand apples, and placed 30 in each of 30 baskets. How many apples were there over?

STANDARD III.—FIRST QUARTER.

1. Divide 17,366 by 38.
2. Divide one million thirty-seven thousand and ninety by 149.
3. A boy had a bag of marbles, and he gave 15 boys 9 each, lost 28, and had 37 left. How many had he at first?
4. A grocer bought a box of oranges, but half were bad and were thrown away. He sold 147 and had 38 left; how many oranges were in the box at first?

SECOND QUARTER.

1. Add together £782 14s. 3d., £63 9s. 8¼d., £3,054 16s. 5½d., £7 18s. 10d., and £496 7s. 11¼d.
2. Divide a quarter of a million by 26.
3. Take £17 17s. 7¼d. from £9,006 19s. 5¾d.
4. In a confectioner's shop three hundred buns were sold in three days. On the first day sixty-eight were sold, and twice as many on the second day. How many were sold on the third day?

THIRD QUARTER.

1. From £10,804 15s. 2¼d. subtract £2,070 15s. 6¾d.
2. Take eleven hundred and one from eleven thousand, and divide the difference by 19.
3. £3,146 17s. 8¾d. + £905 14s. 10½d. + £28,057 12s. 6¼d. + £7,519 18s. 5d. + £68 13s. 11¾d. + £430 19s. 7¼d.
4. A horse, cart, and harness cost £47 10s. The horse cost £28 15s. and the cart 16 guineas. What is the value of the harness?

STANDARD IV.—FIRST QUARTER.

1. £39 15s. 10¼d. × 460.

2. Take £6,058 13s. 7½d. from £30,209 10s. 5¼d., and divide the difference by 49.

3. Divide seven hundred thousand five hundred pounds ten shillings and ten pence halfpenny by 386.

4. At a concert £20 15s. was taken, and 136 persons paid 2s. each. How many paid a shilling each?

SECOND QUARTER.

1. Reduce 5 tons 3 qrs. 15 oz. to half-ounces.

2. How many persons can receive £1 13s. 9d. each out of £945?

3. Bring 29 ac. 15 sq. yds. to sq. feet.

4. Add together 3,706 half-crowns and 6,073 florins.

THIRD QUARTER.

1. Bring 7 miles 6 fur. to yards, and also 9 miles to yards, and subtract.

2. What will a person receive during the last three months of the year, if he gets two pence every hour?

3. Reduce twenty-five thousand chains to miles.

4. If 3 pennies weigh an ounce, what will £5 worth of pennies weigh?

STANDARD V.—FIRST QUARTER.

1. What is the value of 897 watches at £5 16s. 9d. each?

2. Find by practice the cost of 14 cwt. 47 lbs. at £84 per ton.

3. Find the value of 26 yds. 2 ft. 8 in. at 2s. 5½d. per inch.

4. What is the value of 2 sq. miles 2 ro. 30 po. at £2 15s. per acre?

SECOND QUARTER.

1. If 45 men eat 50 lbs. of beef in 3 days, how much would 36 men consume in the same time?

2. What salary should be received for 7 weeks 4 days 5 hours at £4 14s. 6d. per week of 6 days, and 9 hours being a day's work?

3. How many lbs. of tea worth 2s. 4d. per lb. could I get in exchange for 9 chests, each containing 49 lbs., at 3s. per lb.?

4. Make out a bill for the following articles:—

108 buttons at 7½d. per doz.;
15 yards at 4¼d. per yard;
9½ yards at 6½d. per yard;
1½ doz. yards at 1¾d. per yard;
14 collars at 5s. 6d. per doz.

THIRD QUARTER.

1. From the sum of $\frac{4}{5}$ and $\frac{5}{6}$ take their difference.

2. A man spends $\frac{1}{3}$ of his wages on clothes, $\frac{5}{8}$ on food, $\frac{1}{10}$ on rent, and saves the rest. What part of his wages does he save?

3. What will 5½ lbs. of soap cost, if 1½ cwt. cost 3 guineas?

4. Take $\frac{1}{4}$ of a ton from $\frac{3}{5}$ of a ton, and give the answer in cwt.

STANDARD VI.—FIRST QUARTER.

1. Divide ·1 by ·001, and subtract 90·909 from the quotient.

2. Simplify:—

$$\frac{4}{3\frac{1}{3}} + \frac{\frac{5}{8}}{6} - \frac{3}{8}.$$

3. Multiply 19 by twenty-seven ten thousandths, and divide the product by ·288.

4. Divide $(18\dot{4} - 7\cdot8\dot{3})$ by $(\cdot\dot{6} + \cdot875 - \cdot9)$, and give the answer as a vulgar fractio.

SECOND QUARTER.

1. If 8 horses are worth 14 cows, and 6 cows are worth £78, what is the worth of 15 horses?

2. What decimal of £3 15s. is $\frac{3}{7}$ of 4s. 8d.?

3. If 20 men earn £36·375 in 5 days, how much would 34 men earn in the same time?

4. A post stands $\frac{1}{7}$ in mud, $\frac{3}{5}$ in water, and 48 feet above water; what is the length of the post?

THIRD QUARTER.

1. Find the simple interest on £956 13s. 4d. for 8 months at 3¾ per cent.

2. One pipe can fill a cistern in 10 minutes, and a second pipe can empty it in 18 minutes. If both are opened together, in what time will the cistern be full?

3. How much money lent at 3 per cent. for 4½ years will amount to £96 9s. 6d.?

4. An estate is worth £15,000. A person entitled to $\frac{1}{8}$ of it sells $\frac{3}{5}$ of his share. What is the value of the remainder of his share?

STANDARD VII.—FIRST QUARTER.

1. At what rate per cent. will £365 gain £57 9s. 9d. in 3½ years?

2. If 27 dresses are made by 24 dressmakers in 10 days, in what time can 25 dressmakers make 30 dresses?

3. How many lbs. of tea at 1s. 8d. per lb. must I buy, so that by selling it at 2s. 6d. per lb., I may gain £2 7s. 6d.?

4. If the 3d. loaf weigh 60 oz., when wheat is 54s. per quarter, what should the 4d. loaf weigh, when wheat is 1s. 6d. per peck?

SECOND QUARTER.

1. Divide £50 among A, B, and C, so that for every £2 that A gets, B shall get £3 and C £5.

2. If I bought 2 lbs. of tea at 2s. 4d. per lb., 3 lbs. at 2s. 6d. per lb., and 4 lbs. at 3s. 4d. per lb., what was the average cost per lb.?

3. In what time will £263 15s. amount to £311 4s. 6d. at 4½ per cent.?

4. The readings of a thermometer for a week were 58·7°, 54·6°, 53·8°, 56°, 52·9°, 53·2°, and 59·3°. Find the average temperature.

THIRD QUARTER.

1. In a box containing 650 oranges 6 per cent. are bad. How many sound ones are there?

2. A grocer sold 136 cwt. of sugar for £146 12s. 6d. thereby gaining 15 per cent. What was the cost price per cwt.?

3. A piano was sold for £34 10s. at a loss of 8 per cent. What must be the selling price to gain 8 per cent.?

4. A bought an article for 15s., and sold it to B at a gain of 7⅛ per cent. B sold it for £1 1s. 6d.; what was his percentage of gain?

ANSWERS.

STANDARD I.

	FIRST.	SECOND.	THIRD.
1.	747.	1,487.	2,015.
2.	380.	336.	393.
3.	553.	587.	99.
4.	20; 24; 9.	60; 27; 28.	40; 48; 54.

STANDARD II.

	FIRST.	SECOND.	THIRD.
1.	48.	8,660,320.	7,340.
2.	108,005.	9,926.	14,669,900.
3.	1,325,052.	7,008.	71,668.
4.	79,200 feet.	60 marbles.	2,100 apples.

STANDARD III.

	FIRST.	SECOND.	THIRD.
1.	457.	£4,405 7s. 2¼d.	£8,733 19s. 7½d.
2.	6,960 + 50.	9,615 + 30.	521.
3.	200 marbles.	£8,989 1s. 10½d.	£40,129 17s. 1½d.
4.	370 oranges.	96 buns.	£1 19s.

STANDARD IV.

	FIRST.	SECOND.
1.	£18,304 12s. 11d.	361,118 hf.-oz.
2.	£492 17s. 5¾d. + 16 q.	560 persons.
3.	£1,814 15s. 4½d. + 200 q.	1,263,375 sq. ft.
4.	143 persons.	£1,070 11s.

THIRD.

1. 2,200 yards.
2. £18 8s.
3. 312½ miles.
4. 25 lbs.

STANDARD V.—FIRST.

1. £5,236 4s. 9d.
2. £60 11s. 3d.
3. £118 19s. 8d.
4. £3,521 17s. 9¾d.

SECOND.

1. 40 lbs.
2. £36 13s. 3d.
3. 567 lbs.
4. 5s. 7½d. + 5s. 3¾d. + 5s. 1¾d. + 2s. 7½d. + 6s. 5d. = £1 5s. 1½d.

THIRD.

1. ⅝.
2. $\frac{5}{16}$.
3. 2s. 0¾d.
4. 11 cwt.

STANDARD VI.

	FIRST.	SECOND.	THIRD.
1.	9·091.	£341 5s.	£23 18s. 4d.
2.	¾¼ lb.	·026.	22½ minutes.
3.	·178125.	£61 16s. 9d.	£85.
4.	16$\frac{1}{11}$.	105 feet.	£1,562 10s.

STANDARD VII.

	FIRST.	SECOND.	THIRD.
1.	4½ per cent.	A £10, B £15, C £25.	611 oranges.
2.	13½ days.	2s. 10d.	18s. 9d.
3.	57 lbs.	4 years.	£40 10s.
4.	90 oz.	55·5°.	33⅓ per cent.

Tests in Mental Arithmetic.

STANDARD I.

1. How many are 5 dozen? 60.
2. Take 3 dozen away; how many are left? 24.
3. How many pence are there in 4 shillings? 48.
4. Take 48 from 100. 52.
5. Multiply 5 by itself. 25.
6. If I had 9 shillings, and spent half of it, how much had I left? 4s. 6d.
7. How much more was wanted to make a crown? 6d.
8. What would ¼ lb. of soap cost at 6d. per lb.? 1½d.
9. What would a pound of tea cost, if it is 6d. per quarter? 2s.
10. What would a pound and a half cost? 3s.
11. What is twice the half of 3½d.? 3½d.
12. How many marbles could you get for 3½d. at 10 a penny? 35.

STANDARD II.

1. Add 29 and 21. 50.
2. How many baskets, each containing 20 apples, can be filled from a barrel containing 500? 25.
3. How many more than 2 dozen is that number? 1.
4. What change would be received out of half-a-crown, after buying 2½ lbs. of beef at 10d. per lb.? 5d.
5. What would ¾ lb. cost? 7½d.
6. If oranges are sixpence a dozen, how many could I get for 7½d.? 15.
7. A box of eggs contains 48 dozen; how many gross is that? 4.
8. I had a crown, and spent 3d. out of every shilling. How much had I left? 3s. 9d.
9. How many halfpence could I get for that amount? 90.
10. How many fives are there in that number? 18.
11. What is the cost of 8 cricket caps at 8d. each? 5s. 4d.
12. What change would you get out of half-a-sovereign? 4s. 8d.

STANDARD III.

1. How many weeks are there in 2 years? 104.
2. What is the quarter of 104? 26.
3. What is the quarter of 26? 6½.
4. What is the half of 6½? 3¼.
5. A woman sold 100 oranges; half were sold at a penny each, and the rest at ½d. How much did she get? 6s. 3d.
6. How many threepences are there in that amount? 25.
7. How many marbles could you get for 4½d. at a penny a dozen? 54.
8. If a penny a score, how many would you get? 90.
9. How many dozen are there in that number? 7½.

10. If two books cost half-a-crown, how much would six books cost? 7s. 6d.

11. How much is required to pay 10 men 25s. each? £12 10s.

12. ½ of 540 ÷ ½ of 35. 12.

STANDARD IV.

1. What is the cost of 7 dozen buns at ½d. each? 3s. 6d.

2. How many weeks are there in 3 years? 156.

3. What is the cost of 156 articles at 4s. each? £31 4s.

4. What part of 2 days is 8 hours? ⅓.

5. What part of 2 lbs. is 4 ounces? ¼.

6. How much are ten times 15s. 8½d.? £7 17s. 1d.

7. How many pence are equal to that amount? 1,885.

8. How many pints are there in 78 gallons of milk? 624.

9. What is the cost at 3d. per quart? £3 18s.

10. A board is 15 feet long and 4 inches wide; what is its area in square feet? 5.

11. What would be its value at ¼d. per square inch? 15s.

12. Each side of a square field measures 1,320 yards; how many miles round is it? 3.

STANDARD V.

1. How much would 2 quires of foolscap cost at 15s. a ream? 1s. 6d.

2. What is the cost of 4 sheets of paper at that price? 1½d.

3. What would a ream of paper cost at a farthing a sheet? 10s.

4. What part of 10s. is a double-florin? ⅖.

5. What part of £1 is 12s. 6d.? ⅛.

6. If 3 cwt. cost £7 10s., what will 56 lbs. cost? £1 5s.

7. What is the cost of 10 ounces of tea at half-a-sovereign for 3 lbs.? 2s. 1d.

8. A man had a shilling, and he gave to each of 5 boys an eighth of it. How much money had he left? 4½d.

9. How much would be wanted to give 12 boys an eighth of sixpence each? 9d.

10. A boy gave away ⅞ of his marbles, and then lost half the remainder. What part has he left? 1/16.

11. If he had 9 left, how many marbles did he give away? 126.

12. What is 5 per cent. on £179 15s.? £8 19s. 9d.

STANDARDS VI. AND VII.

1. What is the difference between ⅓ and ·75? ·05 or 1/20.

2. I have a dozen apples; to how many boys could I give ·75 of an apple each? 16.

3. What must I do to ·75 to make it ·0075? Divide by 100.

4. Find a fourth proportional to 36, 45, and 20. 25.

5. Divide £60 into two parts in the ratio of 7 : 8. £28 and £32.

6. What decimal of a guinea is 17s. 6d.? ·8̇3̇.

7. Express ⅔ of ⅓ of ¼ as a decimal. ·0416̇.

8. What will £320 amount to in 3½ years at 2½ per cent.? £348.

9. In what time will it amount to £500 at simple interest? 22½ years.

10. If oranges cost a halfpenny each, for what must they be sold per dozen to gain 25 per cent.? 7½d.

11. By selling a cow for £18 a farmer lost 10 per cent.; what did it cost him? £20.

12. If it had been sold for £22 10s., what would have been the percentage of gain? 12½ per cent.

Iphigenia in Aulide.

ACT V—*continued.*

SCENE V.—CLYTEMNESTRA, ARCAS, ÆGINE, GUARDS.

Arcas. Doubt not, madam, a god combats for you. At this very moment Achilles is answering your prayers; he has broken the Greeks' too feeble barriers: Achilles is at the altar. Calchas is in dismay: the fatal sacrifice is yet suspended. All threaten one another; all run; the air roars, the sword glitters. Achilles places around your daughter all his friends, who are ready to devote themselves to him. Sad Agamemnon, who dares not own it, either to conceal from his sight the murders which he foresees or else to hide his tears, has veiled his visage. Come, as he is silent, come, and by your words second the help of your defender. Himself, with his own hand, smoking with blood, he wishes to put back his love into your arms, himself he has charged me to direct your footsteps: fear nothing.

Clytemnestra. I, to fear! Ah! let us run, dear Arcas. The most dreadful peril has nothing that can make me turn pale. I will go everywhere . . . But, O gods, is it not Ulysses whom I see? It is he: my daughter is dead! Arcas, it is too late!

SCENE VI.—ULYSSES, CLYTEMNESTRA, ARCAS, ÆGINE, GUARDS.

Ulysses. No, your daughter lives, and the gods are satisfied. Be reassured: Heaven has been pleased to give her back to you.

Clytemnestra. She lives! And it is you who come to tell me so!

Ulysses. Yes, it is I, who have thought it my duty to harden your husband against both you and her—it is I, who, anxious just now of the honour of our arms, have by austere advice caused your tears to flow, and who come, now that Heaven is at length appeased, to repair all the trouble which I have given you.

Clytemnestra. My daughter! ah! prince! O Heaven! I remain in dismay. What miracle, my lord—what god has given her back to me?

Ulysses. Myself you see now, in this happy moment, seized through it with awe, with joy and rapture. Never has any day appeared more fatal to Greece: discord already, mistress of the whole camp, had drawn her mortal veil over all eyes, and given the combat's cruel signal. Your daughter, alarmed at so fearful a sight, saw Achilles in her favour and the army against her; but, though alone on her side, Achilles in fury filled the army with terror and divided the sympathies of the gods. Already in the air rose a cloud of darts; already flowed blood, the precursor of massacre: between the two parties Calchas came forward, with fierce eye, sullen look, and up-starting hair, terrible, and filled, no doubt, with the god who agitated him: 'You, Achilles,' said he, 'and you Greeks, hearken to me. The god who now addresses you through my lips explains me his oracle, and informs me of the choice he has made. Another of Helen's blood, another Iphigenia must, here sacrificed, leave her life upon this altar. Theseus, secretly united to Helen, caused her rape to be followed by Hymen, from whence sprang a daughter whom her mother concealed, and who was called by the name of Iphigenia. Myself I saw then this fruit of their love: I threatened her days with a sinister future. Under an assumed name, her dark destiny and her own furies have brought her here. She sees, she hears me, she is before your eyes, and, in short, it is she whom the gods are demanding.' Thus spake Calchas. The whole camp in silence hears him with terror and looks at Eriphyle. She was at the altar, and perhaps in her heart complained of the slowness of the fatal sacrifice. She herself, but a while ago, had come with hasty step and revealed your flight to the Greeks. Her birth and destiny are secretly admired, but as, after all, Troy is the prize of her death, the whole army loudly declares against her and gives to Calchas her sentence of death. Already to seize her Calchas raises his arm: 'Stay,' said she, 'and draw not near me; the blood of those heroes, from whom thou sayest that I am descended, will well know how to shed itself without the help of thy profane hands.' Furious she flies, and upon the altar near, seizes the sacred dagger, and plunges it into her breast. No sooner does her blood flow and redden the earth, than the gods make the thunder roll upon the altar; the winds fill the air with happy quiverings, and the sea replies with its roaring; the shore afar moans, white with foam: the pile of itself sets into a flame; the heavens sparkle with lightning, open, and throw amongst us a holy awe which re-assures us all. The astonished soldiers say that Diana, wrapt in a cloud, has descended upon the pile; and think that, rising in its flames, she was carrying to heaven our incense and our prayers. All hasten, all depart. In this general felicity, Iphigenia alone weeps for her enemy. Come and receive her from the hands of Agamemnon; come, Achilles and he, madam, burning with a desire to see you, and, now reconciled, are ready to confirm their august alliance.

Clytemnestra. By what prize, what incense, O Heaven, can I ever reward Achilles and repay thy goodness?

(*The end.*)

—o—

Our Certificate Class.

BY DR. GEORGE BEACH, M.A.

Head Master of Christ Church Schools, Macclesfield, Co-author of 'Our Mother Tongue.'

GENERAL REMARKS.

1. This month our detailed Routines are dispensed with, all the Syllabus having been covered, in order that Revision may be substituted. Not on this account should our readers abandon methodical study, but we should advise that the private study be still carried on in accordance with the general plan given in the March number, except that Music should take the place of Repetition or some other well-known subject.

2. A general knowledge of *Prosody* should now be obtained. A few important observations upon the Prosody of Macbeth, etc., follow these remarks.

Every line in the play should be carefully scanned, and the defective ones recorded, with the reasons for their irregularity.

3. ACTING TEACHERS who intend taking the Music Paper must produce a certificate from some competent person (such as the organist of their church) that they have such an amount of musical skill, vocal or instrumental, as is sufficient for the purpose of teaching children to sing from notes.

4. Only those teachers who have creditably passed the First Year's Papers in Geography, History, Arithmetic, Algebra and Mensuration, will be allowed to be examined in Languages.

MACBETH.

BLANK VERSE ordinarily is written in *Iambic Pentameters*, that is in lines of five feet of two syllables each, the second syllable in each foot being accented.

e.g. The	lab	-our we		de-light		in phys		-ics pain	
	1		2		3		4	5	

(Act II., Scene 3, Line 31.)

This line is so smooth that it would be intolerably monotonous and formal if invariably used. It is therefore intruded upon and varied by

(1) *A change in the position of the accent*, which turns the Iambic into Trochaic;

e.g.

In these	*flatt*-er		-ing streams,		and make		our faces		
1		2		3		4		5	

(Act III., Scene 2, Line 33.)

(2) *A change in the number of feet*, introducing (say) Tetrameters or Hexameters instead of Pentameters. This takes place at times when rhyme is introduced.

e.g. (*a*)

Doub-le,	doub-le	toil and	troub-le					Trochaic rhyming Trimeter.
Fi-re	burn and	cauld-ron	bubb-le					
1	2	3	4					

(Act IV., Scene 1, Line 20.)

(*b*)

I dare	ab-ide		no long		-er, whith		-er should		I fly		
1		2		3		4		5		6	

(Hexameter or Alexandrine. Act IV., Sc. 2, Line 73.)

(3) *Fragmentary Lines:*

(*a*) *That now* (Act I., Scene 2, Line 59.)

Sweno, the Norway's king, craves composition.

Ross has been disturbed in his narrative, hence the rhythm is interrupted.

(*b*) Why in that rawness left you wife and child
Without leave-taking? I pray you.
(Act IV., Scene 3, Line 28.)

Malcolm's indignation over-rides poetical measure.

(*c*) This is a sorry sight [looking on his hands].
(Act II., Scene 2, Line 21.)

The action of looking supplements the speech.

(*d*) And so I do commend you to their backs.
Farewell. (Act III., Scene 1, Line 40.)

Banquo departs, and therefore the line abruptly closes.

See also Act II., Scene 1, Line 41; Act I., Scene 5, Line 62; Act I., Scene 2, Lines 20, 41, 37.

(4) *Hypermeter* (above measure), where a line has one or more syllables in excess.

(*a*) I ám | *for the áir* | this night | I'll spend |
(Act III., Scene 5, Line 21.)

(*b*) For mine | *own safe-ties* | you may | be right | -ly just
(Act IV., Scene 3, Line 30.)

(*c*) I dreámt | last night | of the | three wé | -ird sist-*ers*
(Act II., Scene 1, Line 20.)

(5) *Truncated or catalectic feet, i.e.*, feet cut shorter than the standard length by having a syllable omitted.

Dr. Abbott says in his 'Shakesperian Grammar,' 'Monosyllables which are emphatic—either (*a*) from their meaning, as in case of exclamations, or (*b*) from their use in antithetical sentences, or (*c*) which contain diphthongs or (*d*) vowels preceding *r*—often take the place of a whole foot.'

(*a*) & (*c*) 'Gainst my | cap-tiv | -i-ty. | *Hail!* | brave friend |
(Act I., Scene 2, Line 5.)

(*b*) Of good | -ly thous | -ands But | *for* | all this |
(Act IV., Scene 3, Line 44.)

(*d*) Not in | the *wo* | *-rst* rank | of man | -hood say't |
(Act III., Scene 1, Line 103.)

(6) *Rhyming Lines.*

Rhyme was used by Shakespere—

(*a*) *naturally*, viz., when the *dramatis personæ* would employ it as in incantations and songs (Act IV., Scene 1).

(*b*) *conventionally*, as a '*tag*' to denote the end of a scene or speech (Act I., Scene 2, *end of scene*), (Act I., Scene 4, Lines 20 and 21, *end of speech*), and also occasionally to denote '*asides*' (Act I., Scene 3, Lines 146, 147).

(7) Prose used for—

(*a*) Comic incidents.
(*b*) Letters (Act I., Scene 5, Lines 1—13).
(*c*) Unpoetical scenes (Act II., Sc. 3, Lines 1—20).
(*d*) Imaginative flights and frenzy (Act V., Sc. 1, Lines 34—39, etc.).

NOTES ON REASONING *(continued)*.

1. When two logical propositions are so related that the whole or part of the *Premises* of the first is the whole or part of the *Conclusion* of the second, and the whole or part of the *Conclusion* of the first is the whole or part of the *Premises* of the second—they are said to be CONVERSE to one another.

2. The most ordinary fallacies in reasoning are:—

(*a*) The use of ambiguous terms, as—
The *dog* barks—The dog is a star—∴ a star barks.

(*b*) Use of ambiguous structure.
The things they hold, *all feel*—But they hold trees —∴ Trees feel.

(*c*) Error in composition, as—
Two and three are even and odd—But two and three are five—∴ Five is even and odd.

(*d*) Error in division, as—
Five is one number—But two and three are five—∴ Two and three are one number; OR Four and one are five—But two and three are five—∴ Four = two, and one = three.

(*e*) Drawing a general conclusion from one (or too few particulars) particular.
He spoke yesterday—∴ He will speak to-day.

(*f*) Erroneous confutation (*ignorationis elenchi*), as when, in trying to disprove that '*man is free*,' I prove that he is '*subject to law*.'

(*g*) 'BEGGING THE QUESTION' (*petitionis principii*), or when the conclusion is equivalent to the premises, as —'There never was a time when the world did not exist, nor will be a time when it will not exist— ∴ The world is eternal.

As a matter of clear demonstration we have instanced such flagrant examples that our readers may deem these fallacies exceedingly easy to detect, but as a matter of fact, more or less veiled, sometimes very ingeniously, they are employed with absolute success by every political orator of the day, and their use was not disdained by such oratorical giants as Cicero and Demosthenes.

NOTES ON CHARACTER AND HABITS.

The word CHARACTER is derived from the Greek χαραχτηρ, that which is cut, marked, impressed, stamped or engraved.

Now it represents *three* distinct meanings or gradations of meaning.

1st. A *character* is a mark, engraving or *letter*. Thus we speak of Greek, German and Roman characters, with reference to the printed letters of a book, etc.

2nd. The *character* of a person often signifies his *disposition*. This meaning is derived from the first, through the teaching of one school of metaphysicians who hold that the mind is at the first moment of its creation similar to WHITE PAPER, void of all inscription, or similar to an EMPTY CABINET. ['For such . . . . instil into the unwary, and as yet unprejudiced, understanding (for *white paper* receives any characters) those doctrines they would have them retain and profess.'—*Locke's Understanding*, Book I., Chap. III., Sect. 22. 'The senses, at first, let in particular ideas and furnish the yet *empty cabinet*.'—Book I., Chap. II., Sect. 15.]

And just as the distinctive peculiarity and influence of the originally *white paper* depends not upon its primitive blankness but upon the characters inscribed thereon, so the disposition or bent of the human mind is not determined by any *innate ideas* originally implanted therein, but by the impressions or *characters* engraved by experience.

3rd. By a further development *character* often means *reputation*. For a person's reputation depends on his conduct, which is supposed to denote his disposition, which latter has been created by impressions on the originally blank but receptive mind.

The *second* of these meanings is the most important, and is the one with which we have chiefly to deal. Whether we accept Locke's doctrine in its entirety or not, we are bound to acknowledge that a child's surroundings do not only affect his acts but actually and importantly modify his mental constitution. The teacher, and more especially the parent, can therefore materially guide that formation of character which is always going on, and in which every single item of experience is a determining factor.

The word HABIT has ordinarily *two* meanings. It is derived from the Latin word '*habeo*,' I have. Therefore, a person's habits are the things that he has generally—which envelop him—which we see more of, than of the real man himself. Whilst *character* deals with what a man *is*, what he has become under the regulation of experience, *habit* deals with what a man constantly does or appears to be. Meanwhile the two interact; character determines the habits, and the habits (for use is second nature) modify the character.

1st. Habit means *clothing*, or a garment, as the Latin *habitus*, or the English riding-*habit*.

2nd. It means a *custom* or use. This is derived from the 1st meaning. When any mode of thought, action or inaction has become from long usage almost involuntary (for what we have once done we are prone to repeat)—when it has *clothed* the natural *character* or disposition, so as almost to have superseded any other manifestation of it, it is called a *habit*.

Both these meanings are well brought out by a Scriptural passage and its paraphrase, viz.:—

'He *clothed* himself with curses as with a *garment*' = He had a *habit* of imprecating.

Good habits can never be despotically imposed. They must be external manifestations of *good qualities* engrafted upon the original disposition (or *white paper* condition) of the soul or mind by inculcation and experience.

Good Qualities may be roughly and somewhat empirically classed as the Passive and the Active.

The Passive qualities appertain mostly to conservation, and may be classed under the general head of I. Carefulness or Frugality; II. the Active qualities are those specially needed for success in practical life.

I. *Carefulness or Frugality*
- (*a*) of one's-self:
  (1) body; (2) soul or moral being; (3) mind.
- (*b*) of one's externals:
  (1) time; (2) money, etc.

II. *Qualities needed for successful action.*
- (*a*) Industry;
- (*b*) Perseverance and Patience;
- (*c*) Energy and Concentration;
- (*d*) Observation, Reflection and Foresight;
- (*e*) Courtesy, Good Temper, Kindness to Men and Animals.

Under I. (*a*) can be classed all those qualities or features of character which tend to promote the health, vigour or conservation of our tripartite being.

Under I. (*b*) such qualities of Order and Method as produce Punctuality, Regularity, Economy and Liberality in the expenditure of Time and Money.

Under '*Head II.*,' such is the paucity of Language that the names of the qualities may suffice for the names of the Habits.

From the aforesaid *Good Qualities* implanted, the following *Good Habits* should arise. (N.B.—The complex constitution of man and the lack of a subtle vocabulary forbid anything like a logical category):—

1. Thrift.
2. Good Physical Habits—cleanliness, sobriety, equanimity, etc.
3. Good Moral Habits—temperance, veracity, loyalty, obedience, independence, etc.
4. Good Mental Habits—accuracy, range of judgment, method, etc.
5. Punctuality, regularity, etc.
6. Perseverance, patience.
7. Industry, energy, concentration.
8. Observation, reflection, foresight.
9. Courtesy, good temper, kindness.

It is not pretended that the above classification will sustain unharmed a hostile criticism, but, practically, if our pupils will think over the above enumerations and study how to originate and foster these habits, they will be invincible against the assaults of inimical queries.

SCHOOL MANAGEMENT.

MALES AND FEMALES.

N.B.—Question I. (on School Registers) ***must not be omitted by any candidate.*** Not more than eight questions may be answered.

(*Three hours allowed for this paper.*)

I.
- (*a*) A school has been opened 413 times in the year: 67,032 attendances have been made. What is the annual average?
- (*b*) How should the attendance of half-timers be recorded, and what special effect have they on the annual average?
- (*c*) Give a few brief rules for keeping the admission register.
- (*d*) Describe fully the best system of marking and testing the accuracy of the class registers.

II. What processes of thought are required for accurate 'classification'? Say what subjects of school instruction furnish the best discipline in classifying objects, whether mental or physical.

III. What is meant by the 'Association of Ideas'? and in what departments of your teaching are the laws of Association best illustrated?

IV. What is meant by Induction? Sketch out a lesson in which the inductive method is employed, taking *one* of these subjects:—
- (*a*) Passive Verbs.
- (*b*) The properties of water.
- (*c*) Climate.

V. Much time is often spent by class-teachers in causing words to be spelt aloud, and in repeating, as an oral exercise, the spelling of the same words. Do you think such an exercise either useful or necessary? If not, how can good spelling be taught without it?

VI. What twofold rule does Locke give as a guide against ill-manners? What is his teaching with regard to 'self-respect,' and courtesy?

VII. Enumerate the conditions on which the perfect healthiness of a schoolroom and premises mainly depends, and say what precautions it is in the teacher's power to take for securing them.

VIII. Give the requirements of the Code in Geography for the various standards. Briefly state how you would teach it, (*a*) in Standard I., (*b*) in Standard VII., and what apparatus would be desirable.

IX. In what circumstances is it advisable to teach all the classes the same subjects at the same hours? In what order should you propose to teach reading, writing, and arithmetic during the day, and why?

X. Write notes of a lesson on *one* of these subjects:—
- (*a*) Kindness to animals.
- (*b*) A citizen's duties.
- (*c*) The Noun Sentence.

XI. How would you protect the eyesight of your scholars, (*a*) by proper lighting, (*b*) by judicious arrangement of desks, (*c*) by proper posture of the scholar, (*d*) and by general supervision?

XII. State concisely what was Locke's opinion of Knowledge *v.* Education.

XIII. If entire 'freedom of classification' were accorded you, how would you utilise the privilege, and what would be the accruing advantages?

XIV. How does Locke propose to train the memory?

DICTATION.

N.B.—THE CANDIDATES ARE REQUESTED NOT TO READ THE FOLLOWING EXTRACTS UNTIL THEY HAVE BEEN 'GIVEN OUT.'

MALES.

Extract from Johnson's 'Life of Gray.'

An epithet or metaphor | drawn from Nature | ennobles Art: | an epithet or metaphor drawn from Art | degrades Nature. | Gray is too fond | of words arbitrarily compounded. | 'Many-twinkling' was formerly censured | as not analogical; | we may say 'many-spotted,' | but not 'many-spotting.' | This stanza, however, | has something pleasing. | Of the second ternary of stanzas, | the first endeavours to tell something, | and would have told it, | had it not been crossed by Hyperion: | the second, describes well enough | the universal prevalence of poetry; | but, I am afraid, | that the conclusion will not rise | from the premises. | The caverns of the North | and the plains of Chili | are not the residences | of glory and generous shame. | But that poetry and virtue | go always together | is an opinion so pleasing, | that I can forgive him, | who resolves to think it true. | Of the third ternary, the first gives | a mythological account of the birth of Shakespere. | What is said of that mighty genius | is true; | but it is not said happily: | the real effects of this poetical power | are put out of sight, | by the pomp of machinery. |

FEMALES.

Extract from Gibbon's 'Decline and Fall of the Roman Empire.'

His treatment of the vanquished | was an abuse | of the right of conquest. | His laws were not less sanguinary | than his arms, | and in the discussion of his motives, | whatever is subtracted from bigotry, | must be imputed to temper. | The sedentary reader is amazed | by his incessant activity | of mind and body; | and his subjects and enemies | were not less astonished | at his sudden presence | at the moment | when they believed him | at the most distant extremity | of the empire; | neither peace nor war, | nor summer nor winter, | were a season of repose; | and our fancy cannot easily reconcile | the annals of his reign | with the geography | of his expedition. | But this activity | was a natural rather than | a personal virtue. | At the head of | his veteran and superior armies, | he oppressed | the savage or degenerate nations, | who were incapable of confederating | for their common safety. |

HISTORY.

MALES.

(TWO HOURS AND A HALF allowed for this paper.)

Candidates are not permitted to answer more than EIGHT questions.

1. Give the principal provisions of the *Act of Settlement*, *Habeas Corpus Act* and the *Bill of Rights;* and describe briefly, with dates, the events immediately preceding each.

2. What are the grounds for supposing the English crown to be *elective?*

3. When and under what provisions were Scotland, Ireland and Wales united to England? When did England secure the Channel Isles? How was Hanover lost to the British sovereign?

4. Draw a sketch map of the battle of Waterloo, and describe briefly the Peninsular War. How was it terminated?

5. What do you know of the relations between William the Conqueror, John and Henry VIII. and the Church?

6. Describe briefly the progress of manufacture in the eighteenth century.

7. Show by a genealogical table the descent of George I. from Edward I. What was Edward I.'s claim to the French throne.

8. Enumerate the colonies we acquired from 1685 to 1788 with the circumstances attending their acquisition.

9. State clearly, with dates, the principal facts connected with any three of the following:—William Pitt the younger, Marlborough, Wolsey and Prince Rupert; and answer *one* of the following questions:—

(*a*) What was Pitt's policy with respect to the House of Lords?

(*b*) Trace the growth of our 'Standing Army.'

10. What were the chief causes which led to the independence of the United States? Narrate the chief incidents of the war very briefly.

11. Relate the origin of 'government by party,' and describe the functions of the 'Cabinet.'

12. Contrast the attitude shown by Elizabeth towards the Parliament with that of Charles I.

HISTORY.

FEMALES.

(*Three hours* allowed for this paper.)

Candidates are permitted to answer EIGHT questions only.

1. Relate the circumstances (very briefly) attending the colonisation of New Plymouth, the settlement of Ulster, and the Translation of the Bible.

2. What part did Ireland play during the Great Rebellion and the Revolution?

3. What do you know of the Star Chamber, the Westminster Assembly, the secret Treaty of Dover, and the 'Addled' Parliament?

4. Describe the treaty concluded at the end of the Dutch War (1667), and explain why the whole of Britain under Charles II. was weaker than a section of the English under Cromwell.

5. What political plots were discovered during the reigns of James I. and Charles II.?

6. Who were the authors of the following works:—'Hymn to the Nativity,' 'Mare Clausum,' 'Call to the Unconverted,' 'The Principia,' 'Anatomy of Melancholy,' and 'History of my own times'? Write a short life of any *one* of these authors.

7. Describe the condition of the people during the Stuart period.

8. Mention the chief events that occurred in 1604, 1678, and 1685, and give the dates of Petition of Right, commencement of Civil War, and the Great Fire of London.

9. Relate briefly the exploits of Blake, Montrose and Ormond.

10. What do you know of the Solemn League and Covenant, the Self-Denying Ordinance, and the Bloody Assize?

11. How was military tenure finally abolished, and what was substituted for it, in order (*a*) to raise the necessary revenue, and (*b*) to provide an army?

12. Enumerate the chief 'persecuting acts' of the Stuart period.

13. Trace the descent of William III. from Edward III.

14. Describe the circumstances of, and connected with, the battle of Worcester.

15. What were the chief provisions of the Treaty of Ripon, the Navigation Act, and the Declaration of Breda?

CORRESPONDENCE.

We shall be pleased to reply briefly and through this column to any seeking information and advice. Communications, if addressed to the Publishers, should be directed 'CERTIFICATE EDITOR.'

Answers demanding urgency will be promptly forwarded per post on receipt of a stamped and addressed envelope. A post may be saved by writing direct to Macclesfield.

Any suggestion tending to the increased utility and interest of these articles, or to the greater convenience of 'COACH' *or* PUPIL, *will be thankfully received and carefully considered.*

CONCORD (Dewsbury).—No harmony is now set in the Music Paper.

D. L. J. (Brecon), S. M. (Merthyr), MANUALS (Canterbury). See 'GENERAL REMARKS,' paragraph 3.

L. F. (Tranmere).—You must arrange with H.M. Inspector to hear your Repetition.

X. Q. S. (Brandon).—We are unable to work all the problems, on account of lack of time; see any good Arithmetic.

L. O. (Swinton), CONSTANT READER (Newcastle), A. T. (Garndiffaith), B. J. (Aigburth), FRIEND (Astbury), J. E. P. (Edinburgh), ADMIRER (Stoke), and E. J. (Bangor T.C.) answered per ordinary letter.

(To be continued.)

—o—

Shakspere's 'Macbeth.'

BY J. L. KINTON, B.A.,

Late Lecturer on English Literature at the Westminster Training College.

X.

[For the sake of economising the space available for these articles, we find it necessary to omit the text, and give only the annotations and commentary.]

ACT III.—*Continued.*

SCENE III. *A Park near the Palace.*

1-4.—The two men who have already appeared (sc. i.) as the hired assassins of Banquo are met by a third, whom Macbeth has sent to join them in performing the deed, partly, as would appear, because he had fuller knowledge of Banquo's movements (see 12, 13, and note on 1, 129), and partly that he might act as a sort of spy upon the other two, and ensure the carrying out of the plot (see 19).

NOTES.

2.—*He needs not our mistrust*, he need not be mistrusted by us. Spoken aside by second murderer to first, about the third.

3.—*Our offices*, our duties.

4.—*To the direction just*, exactly according to the directions already received.

5-8.—*The west yet glimmers*, It is now time for us to expect Banquo. *The lated traveller.*—This is the so-called *generic* use of 'the'; no special traveller is referred to. *Lated*, more commonly *belated*; but the form is not an abbreviation. *Spurs* (his horse) *apace*, rides fast, at a great pace. *To gain the timely inn*, to reach the inn in time, before it is too late; *timely*, suitable to the time, seasonable. *The subject of our watch*, Banquo, for whom we look.

9.—Banquo, who is some little distance away, calls to an attendant for a light; he then, with Fleance carrying the torch, takes the nearest path, on foot, to the palace, leaving his horses to be led by the circuitous road, 'almost a mile' about.'

10.—*Within the note of expectation, i.e.*, expected (at the 'solemn supper,' 1, 13). But the word '*note*' gives the idea of 'marked down,' as in a catalogue. (L. *nota*, a mark.)

12-5.—*He does*, etc. He usually walks from here; *does*, used of habit as in West Country dialect. We should expect '*his* walk.' *It* is used indefinitely. *A light!* Here comes a light, said in a low tone. *Stand to it*, now be ready for it.

It will be rain to-night. We now say, '*There* will be rain.' The verb is impersonal like 'It will rain,' 'it rains.' Immediately Banquo has made this remark to his son, one of the assassins, with the grim joke (*cf.* ii. 2, 56, and note), 'Let it come down,' as a signal to the rest, attacks Banquo, who falls 'with twenty trenched gashes on his head.' The 'First Murderer' had struck out the light, thinking that was 'the way' to carry out their plan with more safety, but thereby, in the darkness and confusion, Fleance, urged by his father's dying cry, is enabled to escape. Observe the pathetic repetition of the word 'fly.' *Slave* (like *villain*, *churl*), much used as a term of abuse and reproach in Old English.

SCENE IV. *Hall in the palace.*

1-6.—*You know your own degrees*, etc.—Take your seats according to your rank. *With society*, sociably. *Play the host*, expecting the murderers, he will not sit down, but walks about among his guests; *the*, used generically as in 'the hearty welcome,' line 2. *Her state*, her state chair. *But in best time*, etc., when all are properly seated, I will desire her to bid you welcome.

7-9.—Lady Macbeth bids him speak her hearty welcome. *They encounter thee*, they receive your welcome, bowing acknowledgment.

10.—He is about to sit down, when he sees one of the assassins at the door, and goes to him.

11.—*Be large*, indulge freely. Large = abundant. *We'll drink a measure*, a full, set draught, a formal toast.

14.—Construe and explain: *It is better without* [outside of] *thee than* (it would be if it were) *within* [inside of] him, *i.e.*, It is better that Banquo's blood should be on thy face than that it should be in his body (or, than that he should be alive). *Without* and *within* are used in their old significations, and '*he*' is put for *him*, with grammatical looseness not unusual in the Tudor poets. Moreover, in this case, '*he*,' in the fourth foot, is put in a sort of rhyme with '*thee*' in the second.

15.—*Dispatch'd*, a euphemism for *killed*. From L. *dis-pedicare*, to unfetter, remove hindrance, hasten, through O.F. *despecher*.

19.—The *nonpareil*, the unequalled, matchless (one). Fr. *non*, not, *par*, equal.

20.—*Is 'scaped*. Intransitive verb of motion forming perfect tense with verb *to be*, like 'is gone.'

21.—*A fit*, an attack of sickness. *I had else been perfect*, otherwise I should have been perfectly sound in health. Verb subjunctive.

23-5.—*As broad and general*, etc., as free and unrestrained as the air which encases or spreads over all things. *Cabin'd, cribbed, confined.* Note the alliteration, and the strong expression of restraint. 'I am shut up in a cabin (a hut or booth), a crib (a manger).' *Saucy*, obtrusive, a special shade of the meaning 'insolent, impertinent.' *Sauce* is originally from L. *sal*, salt; *salsus*, salted, hence what is salted, 'pungent.'

27-32.—*Trenched gashes*, deeply cut wounds. *The least* (being) a death, etc.—Nominative absolute. *Worm*, young snake, is used in O.E. for any serpent, *cf. blind-worm*. *Hath nature*, hath living powers. *Venom*, poison, with secondary sense of malice (L. *venenum*). *Hear ourselves again*, hear ourselves talk again, have another interview.

Lady Macbeth begins to fear that her husband's absence from the table will be unfavourably commented on; she therefore urges him to repeat his welcome to his guests, which he does at once, on his way from the door. But, meanwhile, Banquo's ghost is supposed to enter the hall and take the king's seat. Macbeth, as he beholds the spectre shaking its gory locks and glaring at him, loses his self-possession, and is unable to conceal his terror from the nobles, notwithstanding the queen's efforts to calm him, while she endeavours to explain away his excitement, and prevent their suspicions from being aroused.

33-7.—*You do not give the cheer*, etc., neglect the expressions of welcome due from host to guests. In olden times these were frequently uttered during a feast. *The feast is sold*, etc. 'The feast, for which, during its course, the host does not often vouch that he gives it

with welcome, is sold, is like a meal paid for at an inn.' *To feed were best at home*, 'If eating is the only enjoyment in a feast, that would be best carried on at home.' *From thence*, etc. 'Away from home, the best seasoning to food ('meat') is the courteous welcome of the entertainer ('ceremony'). The meeting of friends would be bare without it.

38.—A wish that good digestion may wait on appetite (enjoyment of the feast), and that these combined may contribute to health. *Wait on*, as an attendant. *Wait* is the subjunctive optative.

40-5.— While Macbeth is thus hypocritically expressing his desire that Banquo were present, the ghost enters. *Honour* = honourable persons,—abstract for concrete. *Roof'd*, a coined word, assembled under one roof. *Had*, subjunctive for should have. *Graced*, distinguished, possessed of grace or goodness. *May I*, optative, I wish that I may have to. *Challenge*, call to account. *Who* for whom. *His absence*, etc., by not coming he falsifies his promise. Note the personification. *Please't*, simple subjunctive. *Grace us*, favour us.

49.—He supposes that some one has brought the corpse of Banquo, and placed it there. When he sees that the spectre has motion and life, he addresses it.

50.—Observe the fine effect of the indefinite *it*.

54.—*Upon a thought*, in the time taken by a thought.

56-7.—*You shall*, you certainly will, you are sure to. *Shall* originally expressed obligation, hence *necessity, destiny*. *You will* is the mere future. *Regard him not*, do not look at him.

60-6.—*O proper stuff*, proper is used, in its old sense of fine, handsome, but is ironical. *This is the very*, etc.—This is just the sort of thing that your fear depicts. *Air-drawn*, painted in the air (cf. ii. 1). *Flaws*, apparently a distinct word from *flaw*, a crack or defect. In Tudor-English it is used for blast, gust. Hackluyt has 'a flow of wind,' and Longfellow in his ballad in the old style, 'The Wreck of the Hesperus' has 'veering flaw.' 'Flaws and starts' are unmanly terrors. *Impostors to true fear*, either playing the part of impostors to manly reasonable fear, or are impostors compared with such fear. *Woman's story*, (ghost) story told by a woman. *Authorised by her grandam*, believed on the testimony of her grandmother. *Grandam*, properly a term of affection, is here used with contempt.

69-73.—*How say you*, what do you say to that? He becomes still more agitated as the ghost again moves its head. *Charnel-houses*, dead-houses, 'places attached to churchyards where bones thrown up by gravediggers are deposited.' *Charnel* is a duplicate of *carnal* (from L. *caro, carnis*, flesh). *Monuments*, tombs. *Maw*, the old English word for 'stomach,' now obsolete. *Kite*, 'for any bird or beast of prey.' 'We will not bury our dead, but see that they are destroyed at once.'

76.—'Before men made laws to purify and civilise the community:' *i.e.*, in barbarous times. *Weal*, 'welfare, used as abbreviation for 'commonwealth.'

80-2.—*And there* (would be) *an end* (of him). *Mortal murders*, deadly murderous wounds, a pleonasm. *Crowns*, heads. *Push us from our stools*, referring to the ghost taking his place at the table.

84.—*Lack you*, desire your company: this verb is almost obsolete.

The queen's remark at once brings Macbeth to himself, and he endeavours to make up for his neglect of his guests; but again (see 40-43), unable to avoid referring to the subject which fills his mind, he professes his regret at Banquo's absence; whereupon the ghost reappears, and Macbeth is so utterly discomposed, that Lady Macbeth, finding she cannot calm him, hurriedly dismisses the company.

85-92.—*Muse at me*, look at me wonderingly. *Muse* = meditate in silence. (I) *would* (that) *he were here*. *We thirst*, we drink with thirst, *i.e.*, heartily. *All* (good) *to all* (of you). *Our duties and the pledge*. With loyal attachment we respond to the toast.

93-96.—*Avaunt* begone. From Fr. *avant*, before (like *advance*. Fr. *avancer*); L. *ab, ante*. *Speculation*, vision, power of seeing, literal meaning. *Glare*, a very effective word implying fierce staring and *painful brightness*: originally it meant 'to shine.'

99-102.—*What* (-ever) *man dare*, verb, subjunctive. *Rugged Russian*. Note the alliteration. Russia was comparatively unknown, barbarous. *Arm'd*, referring to the horn on nose, and tough armour-like hide. *Hyrcan*, Hyrcanian, from Hyrcania, classical name for a province of Persia lying South and South East of Caspian Sea. *Any shape but that*. Note Macbeth's avoidance of Banquo's name. *Nerves*, sinews, original meaning.

103-6.—'Challenge me to meet you in single combat far away from all men.' *If I then* (under those conditions), *trembling* (through fear of thee), *inhabit, i.e.*, remain at home, *protest me the baby of a girl* (a babyish girl).

108.—(I) *pray you, sit still* (keep your seats)—the nobles having risen in perplexed astonishment at the king's continued excitement.

109.—*displaced*, spoiled, lit. removed, put away. *Broke the good meeting*, broken, destroyed its cheerfulness. *Admired*, admirable, wonderful, used ironically.

111-6.—*Overcome*, pass over, come over, literal use of word. *You make me strange*, etc. You make me feel that I cannot understand my own mind. *Owe*, possess, own. *Ruby*, poetical term for 'redness.' *Blanched*, whitened, from Fr. *blanc, blanche*, white. *What sights*. Note, only Macbeth sees the ghost, but he is not aware that it is invisible to the others.

116-117.—*Question*, questioning. *Stand not*, etc., do not be particular about the order in which you go, do not trouble to observe the usual ceremony.

122.—*Blood will have blood*. Proverbial expression founded on Gen. iv. 6, 'He that sheddeth man's blood,' etc.

123-6.—Even the movements of stones and trees have been the means of revealing murders. *Augures*, auguries, divinations (L. *augurium*, from *augur*, a soothsayer. *Augurs* divined by the flight of birds, etc. The hidden *relations* between facts when *understood* (*i.e.*, explained) *have*, etc. *Maggot-pies*, magpies. *Maggot*, like Maggie, diminutive of Margaret. *Cf.* Robin Redbreast, Jenny wren, Jackdaw. *Chough*, a kind of daw. *Man of blood*, murderer. *What is the night?* What hour is it?

127-132.—It is uncertain whether it is night or morning. *At odds*, in dispute. *His person*, his presence. *By the way*, indirectly. *Fee'd*, paid, bribed.

136-8.—He is like a man half-way across a stream. *Returning* is a gerund, and (to) *go*, infinitive. Both these grammatical forms are verbal nouns.

139-143.—*In head*, in design. *Will to hand*, must be put in execution. *Scann'd*, examined, thought of. *My strange and self-abuse*, my strange self-deception. He now recognises that his supposed vision was a delusion proceeding from his own mind only. *Initiate*, for modern initiative or initiatory.

SCENE V. A HEATH. *Thunder.*

A new supernatural character is now introduced in the person of the goddess Hecate, who has already been twice referred to in this play (ii. 1, 51, 52, and iii. 2, 41), but merely as any other deity of classic mythology might be alluded to, for rhetorical ornament. Here she appears as the 'mistress' of the three (so-called) 'Witches,' and having blamed them for trafficking with Macbeth independently of her authority, she requires them 'to make amends,' and in a meeting with him the next day to assist, by their magic arts, in her designs for his destruction (iv. 1). The part she plays is, dramatically speaking, unimportant: in the next 'Witch Scene' (iv. 1, 39, 43) it is still more slight, and the introduction of the character seems to have been rather for the sake of variety and relief,

like that of the Porter (ii. 3), than for the development of the action. Hence the lightness of the metre used, Iambic, instead of the more vigorous Trochaics of the Weird Sisters (i. 1 and 3; iv. 1), and the less elevated and less awful—indeed, the almost playful—tone of her speeches. Thus the difference observable between her part and that of the other supernatural personages may be accounted for without indulgence in the subjective criticism (Clarendon Press, 'Macbeth,' x.-xii.) which would make Middleton, and not Shakspere, the writer of the Hecate passages.

Hecate was worshipped by the ancient Greeks, though not belonging to the ordinary group of divinities, which included Zeus, Hera (*i.e.*, Jupiter, Juno), etc. She is represented as belonging to the older Titanic race, retaining extensive power even under the rule of Zeus. Though invoked as the giver of various benefits to mortals, she also appears as a deity of the lower world, and as presiding over sorcery and witchcraft. As these arts were often practised at night, she became identified with Selene (the Moon goddess), with Diana and Persephone (Proserpina), the Queen of Hades. (See Classical Dictionary.) As to the bringing together of Hecate and the Weird Sisters, and thus confusing the Greek and Germanic superstitions, this was common in the Middle Ages and in Shakspere's time.

1-11.—*Angerly*, formed direct from the noun, is an older word than *angrily*, from the adjective. *Beldame*, like *hag*, a term of contempt for an old woman, means literally fair lady. (Fr. *belle dame*). *Trade and traffic*, treat or bargain. *Riddles*, obscure, ambiguous speeches. *Close*, hidden secret, mysterious. *All harms*, all mischief to mortals. *Wayward*, an almost obsolete word meaning *wilful*, inclining towards his own way from *way* and *ward*.

12-13.—They had gained no advantage in their *traffic* with Macbeth, while he had become king. Hecate arranges that, in return for the supernatural information imparted in the next interview, Macbeth shall be ruined, as their part of the bargain.

15.—*Acheron*, in classic mythology, was a river of Hades, and is here put, by metonomy, for Hades itself. The lower world was accessible from earth, according to the poets, by subterranean passages. Thus, in Virgil, Æneas descends by the gloomy cavern of Avernus to to visit his departed father in the regions below. The *Pit of Acheron* is therefore equivalent to 'the infernal cave,' the place namely, where (iv. 1) the meeting with Macbeth is to take place.

18.—*Your vessels*, especially the 'charmed pot' (iv. 1, 9.) or 'boiling cauldron' in which the 'hell-broth' was to be boiled. *Spells*, charms, magic songs. *I am for the air*, I am about to ascend to the moon. *I'll spend unto*, etc.—*i.e.*, in bringing about *a dismal and fatal end* (to Macbeth).

23-29.—The baneful influence of the moon was represented as being exercised not only by its beams, but also by 'drops' of poisonous fluid falling upon objects. Hecate will use 'the drop profound' to raise spirits.

Profound, mystic, magic, (lit. deep). *Sleight*, properly an abstract noun (from *sly*) signifying dexterity. Hence *sleights* are dexterous actions, *arts* (in a bad sense). *Artificial sprites*, the spirits raised and shown by magic art, the *apparitions* of Act IV. I. *Sprite* is *spirit*, accented on second syllable and contracted. Hence, with a different spelling, *sprightly*. *The strength* of *their illusion*, the power which their appearance, though unreal, should exercise over him; *his confusion*, the confusion of his hopes, his ruin.

30-33.—*Bear his hopes 'bove wisdom*, etc., continue to indulge in expectations of safety regardless of all that wisdom, etc., may suggest to the contrary. *Grace*, religion, goodness;—a meaning derived from the New Testament. *Security*, confidence, absence of care (L. *se*, aside, and *cura*, care). We now say 'a *sense* of security,' as the word has come to mean safety. *Chiefest*, a virtual double superlative.

The margin here has *Music and a song within*, 'Come away, come away,' etc., but it is not necessary to suppose that this stage direction was written by Shakspere. It is not required by the text, which merely says, '*Hark! I am called*' (*cf.* i. 1, 9), and the song (or dialogue between the spirit and Hecate) beginning with these words, as found in Middleton's 'Witch,' may therefore have been introduced merely for stage purposes. There is certainly no ground from this to suppose any joint authorship of the play. The song is given in full in the Clarendon Press Notes.

34-36.—*Spirit*, an attendant upon Hecate. *Let's make haste* (to provide vessels, etc.). *She'll soon be back again* (from the moon).

Scene VI. FORRES. *The Palace.*

This scene serves to express the discontent which is felt among the Scotch nobles, although at present they submit to the cruel tyranny of Macbeth. The disgrace of Macduff (23), and his flight to England, where he has met with Duncan's son (24-26), is the turning-point of the drama; it is followed by the slaughter of his family, which is anticipated in this scene (40); and the invasion of Scotland, already resolved on, is thereupon carried into speedy execution under the leadership of the injured prince and thane, who 'make medicines of their great revenge to cure their deadly grief.'

1-4.—*My former speeches.*—This indicates that such interviews were becoming usual. *Have but hit your thoughts*, have merely suggested the subject to your mind. *Interpret farther*, understand what I state in indirect terms. *Borne*, used actively like *carried on*, not in the ordinary sense of 'suffered.' *Gracious*, good. *Of*, by, used in Old English of the instrument. *Marry*, by Mary, an old oath, generally used satirically. This speech of Lennox is full of sarcasms.

8-24.—*Who cannot want*, who can want. The negative is grammatically superfluous, for the implied answer to the (rhetorical) question is 'No one can want,' etc. *Want*, be without, lack. *Monstrous*, unnatural. *How it did grieve Macbeth!* Of course this is ironical. *Pious*, loyal. The Latin *pius* is used of devotion to the gods, then of affectionate duty to a father (*e.g.*, *pius* Æneas) and to one's country; here, to a king. *Slave* and *thrall* are synonymous; *thrall* is of *A.-S.* origin, and *slave* was introduced from the French (not found before the Tudor age). *Nobly*, ironical; *wisely*, sarcastic. *Borne*, carried on, as in line 3. *Had he Duncan's sons*, etc., If he had them in prison, in his power. *An't please*, if it please. Dr. Abbott shows that this conjunction (*an* = if) was originally identical with *and* (Sh. Grammar, 101-105). *They should find*, they certainly would. *What 'twere to kill*, what (a crime) it was, etc. Note the use of subjunctive where we should use the indicative. *Broad words*, bold, plain, open. *'Cause*, because. *Failed his presence*, absented himself. *In disgrace*, in banishment (lit. in disfavour). *Bestows himself*, lit. places himself, for is now residing.

25-37.—*The due of birth*, that which is due to him by right of birth, *i.e.*, the throne. *The most pious Edward, the holy king*,—The Saxon King Edward, called from his piety the Confessor: he had 'the virtues of a monk,' and was canonised. *The malevolence of fortune . . . . his high respect*,—The ill-will which fortune has shown him (*i.e.*, his misfortune) does not diminish the consideration due to him as a prince. *Upon his aid*, to render him assistance. *Upon*, for the purpose of. *Siward*, the earl of a Saxon province, Northumberland, or Northumbria. *Him above*, reverent expression. *Give to our tables meat, sleep to our nights*, have sufficient food for our households, and enable us to live in security. This refers to Macbeth's exactions, and the general tyranny of his rule. *Free*, remove. The real meaning is, set our feasts free from bloody knives, from

the weapons of the assassin, from murderous attacks. *Faithful homage*, loyal, not feigned unreal homage as at present. *Pine for*, are destitute of, and eagerly desire.

38.—*Exasperate*, for *exasperated*. Verbs were often derived from the Latin passive participle; thus *exasperate* is from *exasperatus*, not from the present tense *exaspero*. In such cases the same form was used in English both for the present tense and for the past participle without adding the English termination *ed*. Thus in Shakespeare we have articulate, degenerate, suffocate, addict, exhaust, devote, &c. This use of one form for the two grammatical relations may have been encouraged by the existence of such English verbs as *set*, *put*, &c.; also in Tudor-English, *heat*, *wed*, *quit*, &c.

40.—*With an absolute*, &c., receiving (from Macduff) an unqualified positive refusal. *Cloudy*, frowning, angry. *Turns me his back* (on Macduff). *Me* is here expletive—a colloquial addition having little or no real meaning, but indicating the speakers interest in the facts (*cf.* the Latin ethic dative). *Hums*, mutters. *As who* = as (if) some one. *Who* is here an indefinite pronoun, as commonly used in Old English. *Rue*, regret, repent. *Clogs*, burdens,—'gives me this unpleasant answer to deliver.' *Hold what distance*, keep as far away. *Our suffering country*; *suffering* requires to be construed after *country*, as the phrase '*under a hand accursed*' depends upon it.

(To be continued.)

Query Column.

RULES.

1. Each correspondent is restricted to *one question*. We should be much obliged if correspondents, who send questions for solution, would give (if possible) the required answer, and the source from which the question is obtained.

2. No query can be answered unless accompanied by the real name and address of the sender, not necessarily for publication, but as a guarantee of good faith and for facility of reference.

3. **When a pseudonym is adopted it should be written at the end of the query, and the real name and address on a separate piece of paper.**

4. Correspondents are requested to write their queries *legibly*, and on one side of the paper only.

5. Replies will not be sent through the post.

6. Queries must reach the office *not later than the 12th of the month*, or they cannot be attended to in the following issue.

*** All communications for this column should be addressed—'*The Query Editor*,' *The Practical Teacher*, *Pilgrim Street, Ludgate Hill, London, E.C.*

Arithmetic.

1. IN OBSCURO.—If A have £200 more in the business than B, but B has his five months and A only four, and A receive £30 more than B out of profits worth £210, find the amount invested by each. (*Capel's* 'Catch Questions in Arithmetic and Mensuration.')

B receives $\frac{1}{2}$ (£210 − £30)
= £90,
And A receives £120;
A's money for 1 month earns £120 ÷ 4 = £30,
B's ,, ,, ,, £90 ÷ 5 = £18;
∴ A's money : B's money :: £30 : £18,
:: 5 : 3,
∴ A's money = £200 × $\frac{5}{5-3}$
= £500,
And B's money = £300.

Note.—This question has no connection with the preceding one.

2. DINAH.—Three men are employed in a work, working respectively 8, 9, and 10 hours per day, and receiving the same daily wage. After 3 days each works one hour a day more, and the work is finished in 3 days more. If the total sum paid for wages be £2 7s. 6½d., how much of it should each receive? (*Brook-Smith.*)

The amount should be divided in the proportion of $6\frac{2}{3}$, $6\frac{3}{4}$, $6\frac{3}{5}$;

$$= \frac{\frac{51}{8} + \frac{57}{9} + \frac{63}{10}}{765 + 760 + 756} \over 120$$

$$= \frac{2281}{1140};$$

£2 7s. 6½d. ÷ 2281 = ½d.,
∴ First should receive ½d. × 765 = 15s. 11½d.,
Second ,, ½d. × 760 = 15s. 10d.,
Third ,, ½d. × 756 = 15s. 9d.

3. MATHEMATICIAN.—A train leaves London at 10 a.m. reaching Portsmouth at 1.15 p.m., and another train leaves Portsmouth at 6.15 a.m. reaching London at 11.30 a.m.; at what time do they meet? (*Hamblin Smith.*)

First train performs the journey in $3\frac{1}{4}$ hours,
Second train performs the journey in $5\frac{1}{4}$ hours;
Distance travelled by first train in an hour = $\frac{4}{13}$ of journey,
Distance travelled by second train in an hour = $\frac{4}{21}$ of journey;
When the first train leaves London, the second train is distant $1\frac{1}{2}$ hours' journey from London

$$= \frac{3}{2} \times \frac{2}{21} \text{ of total distance}$$
$$= \frac{1}{7} \text{ of total distance};$$

Distance travelled by both trains in an hour
= $(\frac{4}{13} + \frac{4}{21})$ of journey
= $\frac{84 + 52}{273}$,, ,,
= $\frac{136}{273}$ of journey;
∴ Time when they meet = $(\frac{1}{7} \div \frac{136}{273})$ hr.

$$= \left(\frac{1}{7} \times \frac{273}{136}\right) \text{ hr.}$$
$$= \frac{39 \times 60}{68} \text{ min.}$$
$$= \frac{2340}{68} \text{ min.}$$
$$= 34\frac{28}{68} \text{ min.}$$
$$= 34\frac{7}{17} \text{ min.}$$
$$= \underline{34\frac{7}{17} \text{ min. past 10.}} \quad \text{Ans.}$$

4. T.M.—If a hen and a half lay an egg and a half in a day and a half, how many eggs will six hens lay in six days?

1½ hens lay 1½ eggs in 1½ days,
∴ 1 hen lays 1 egg in 1½ days,
1 hen lays 4 eggs in 6 days.
∴ 6 hens lay 24 eggs in 6 days.

5. LEARNER.—A person buys an article, and sells it so as to gain 5 per cent. If he had bought it at 5 per cent. lower, and sold it for one shilling less, he would have gained 10 per cent. Find the cost price.

Suppose the cost price was £100, then selling price would have been £105; if the article had been bought at 5 per cent. less, the cost price would have been £95.

If sold at a profit of 10 per cent. the selling price would have been £95 + £9 10s. = £104 10s.;

Difference between the two prices = £105 − £104 10s.
= 10s.;

∴ Cost price of the article = £100 × $\frac{1}{10}$ = £10. Ans.

Algebra.

1. G. N.—Solve:—

$$\left.\begin{aligned} x^2 + 2yz &= a \\ y^2 + 2xy &= c \end{aligned}\right\}$$

(*Dalton's* 'Algebra,' Part 2.)

$$\left.\begin{aligned} &(1)\ x^2 + 2yz = a \\ &(2)\ y^2 + 2xz = a \\ &(3)\ z^2 + 2xy = c \end{aligned}\right\}$$

Adding] $(x + y + z)^2 = 2a + c$. (4)

Subtracting (2) from (1):—

$$(x + y)(x - y) - 2z(x - y) = 0$$
$$(x - y)(x + y - 2z) = 0,$$

Hence $x = y$,
or $x + y = 2z$.

Taking the first case—

$$\left.\begin{aligned} &(1)\ x^2 + 2xz = a \\ &(3)\ z^2 + 2xz = c \end{aligned}\right\}$$

Subtracting (3) from (1)] $x^2 - 2xz + z^2 = c - a$

$$(x - z)^2 = c - a. \quad (5)$$

From (4) $2x + z = \sqrt{2a + c}$

(5) $x - z = \sqrt{c - a}$

Adding] $3x = \sqrt{2a + c} + \sqrt{c - a}$

$$\therefore x = \tfrac{1}{3}(\sqrt{2a + c} + \sqrt{c - a}).$$

(4) $2x + z = \sqrt{2a + c}$

(5) $2x - 2z = 2\sqrt{c - a}$

Subtracting] $3z = \sqrt{2a + c} - 2\sqrt{c - a}$

$$\therefore z = \tfrac{1}{3}(\sqrt{2a + c} - 2\sqrt{c - a}).$$

Taking the second case—

$$x + y = 2z,$$

(4) $x + y + z = \sqrt{2a + c}$

$$3z = \sqrt{2a + c}$$

$$\therefore z = \tfrac{1}{3}\sqrt{2a + c}.$$

(1) $x^2 + 2yz = a$

$$x^2 + 2z(2z - x) = a$$
$$x^2 + 4z^2 - 2xz = a$$
$$x^2 + \tfrac{4}{9}(2a + c) - \frac{2x}{3}\sqrt{2a + c} = a$$
$$x^2 - \frac{2x}{3}\sqrt{2a + c} = a - \tfrac{4}{9}(2a + c)$$
$$x^2 - \frac{2x}{3}\sqrt{2a + c} + \tfrac{1}{9}(2a + c) = a - \tfrac{4}{9}(2a + c) + \tfrac{1}{9}(2a + c)$$
$$= a - \tfrac{1}{3}(2a + c)$$
$$= \frac{a - c}{3}$$
$$x - \tfrac{1}{3}\sqrt{2a + c} = \sqrt{\tfrac{1}{9}(a - c)}$$
$$\therefore x = \tfrac{1}{3}\sqrt{2a + c} + \sqrt{\tfrac{1}{9}(a - c)}.$$
$$y = 2z - x$$
$$= \tfrac{2}{3}\sqrt{2a + c} - [\tfrac{1}{3}\sqrt{2a + c} + \sqrt{\tfrac{1}{9}(a - c)}]$$
$$= \tfrac{1}{3}\sqrt{2a + c} - \sqrt{\tfrac{1}{9}(a - c)}.$$

2. J. R. J.—Solve:—

$$2x + 1 + x\sqrt{x^2 + 2} + (x + 1)\sqrt{x^2 + 2x + 3} = 0.$$

(*Todhunter.*)

$$2x + 1 + x\sqrt{x^2 + 2} + (x + 1)\sqrt{x^2 + 2x + 3} = 0$$
$$2x + 1 + x\sqrt{x^2 + 2} = -(x + 1)\sqrt{x^2 + 2x + 3}$$

Squaring] $(2x + 1)^2 + 2x(2x + 1)\sqrt{x^2 + 2} + x^2(x^2 + 2) = (x + 1)^2(x^2 + 2x + 3)$

$$2x(2x + 1)\sqrt{x^2 + 2} = (x + 1)^2(x^2 + 2x + 3) - (2x + 1)^2 - x^2(x^2 + 2)$$
$$= x^4 + 4x^3 + 8x^2 + 8x + 3 - 4x^2 - 4x - 1 - x^4 - 2x^2$$
$$= 4x^3 + 2x^2 + 4x + 2$$
$$= 2(x^2 + 1)(2x + 1)$$
$$(2x + 1)[x\sqrt{x^2 + 2} - (x^2 + 1)] = 0;$$
$$\therefore 2x + 1 = 0,$$
or $x\sqrt{x^2 + 2} - (x^2 + 1) = 0;$
If $2x + 1 = 0$
$\therefore x = -\tfrac{1}{2}$.
If $x\sqrt{x^2 + 2} - (x^2 + 1) = 0$
$x^2(x^2 + 2) = (x^2 + 1)^2$
$x^4 + 2x^2 = x^4 + 2x^2 + 1$, which is impossible.
∴ The only solution is $x = -\tfrac{1}{2}$.

3. EXON.—Find the values of a and b for which the expression—

$$\frac{a\sqrt{n + 1}}{\sqrt{n} + \sqrt{n - 1}} + \frac{2b\sqrt{n}}{\sqrt{n - 1} + \sqrt{n + 1}} + \frac{\sqrt{n - 1}}{\sqrt{n + 1} + \sqrt{n}}$$

equals zero. (*III. Stage, Science and Art*, 1888.)

$$\frac{a\sqrt{n + 1}}{\sqrt{n} + \sqrt{n - 1}} + \frac{2b\sqrt{n}}{\sqrt{n - 1} + \sqrt{n + 1}} + \frac{\sqrt{n - 1}}{\sqrt{n + 1} + \sqrt{n}}$$

(Rationalising the denominators)

$$= \frac{a\sqrt{n + 1}(\sqrt{n} - \sqrt{n - 1})}{n - (n - 1)} + \frac{2b\sqrt{n}(\sqrt{n - 1} - \sqrt{n + 1})}{n - 1 - (n + 1)} + \frac{\sqrt{n - 1}(\sqrt{n + 1} - \sqrt{n})}{n + 1 - n}$$
$$= a\sqrt{n + 1}(\sqrt{n} - \sqrt{n - 1}) - b\sqrt{n}(\sqrt{n - 1} - \sqrt{n + 1}) + \sqrt{n - 1}(\sqrt{n + 1} - \sqrt{n});$$

we have to find the values of a and b independent of n to make this vanish, and we can therefore equate n to what we please.

Let (i.) $n = 3$ and (ii.) $n = 1$.

Then (1) $2a(\sqrt{3} - \sqrt{2}) - b\sqrt{3}(\sqrt{2} - 2) + \sqrt{2}(2 - \sqrt{3}) = 0$
(2) $a\sqrt{2} - b(-\sqrt{2}) = 0$

(2) $a\sqrt{2} + b\sqrt{2} = 0$
$\therefore b = -a$.

Substituting in (1)

$$2a(\sqrt{3} - \sqrt{2}) + a\sqrt{3}(\sqrt{2} - 2) + \sqrt{2}(2 - \sqrt{3}) = 0$$
$$2a\sqrt{3} - 2a\sqrt{2} + a\sqrt{6} - 2a\sqrt{3} + 2\sqrt{2} - \sqrt{6} = 0$$
$$a\sqrt{6} - 2a\sqrt{2} = \sqrt{6} - 2\sqrt{2}$$
$$a(\sqrt{6} - 2\sqrt{2}) = \sqrt{6} - 2\sqrt{2}$$
$$\therefore a = 1;$$

and therefore $b = -1$.

We can verify these values thus:

$$\sqrt{n + 1}(\sqrt{n} - \sqrt{n - 1}) + \sqrt{n}(\sqrt{n - 1} - \sqrt{n + 1}) + \sqrt{n - 1}(\sqrt{n + 1} - \sqrt{n})$$
$$= \sqrt{n^2 + n} - \sqrt{n^2 - 1} + \sqrt{n^2 - n} - \sqrt{n^2 + n} + \sqrt{n^2 - 1} - \sqrt{n^2 - n}$$
$$= 0.$$

4. REX.—If the number of shot in a triangular pile is to the number of shot in a square pile of double the number of courses as 13 to 175, find the number of shot in each pile.

The number of shot in a triangular pile with n balls in a side of the base

$$= \tfrac{1}{6} n (n + 1) (n + 2),$$

The number in a square pile

$$= \tfrac{1}{6} n (n + 1) (2n + 1);$$

$$\therefore \tfrac{1}{6} n (n + 1) (n + 2) : \tfrac{1}{6} \times 2n (2n + 1) (4n + 1) = 13 : 175,$$

$$(n + 1) (n + 2) : 2 (2n + 1) (4n + 1) = 13 : 175,$$

$$\therefore 175 (n + 1) (n + 2) = 26 (2n + 1) (4n + 1)$$

$$175 (n^2 + 3n + 2) = 26 (8n^2 + 6n + 1)$$

$$175n^2 + 525n + 350 = 208n^2 + 156n + 26$$

$$33n^2 - 369n = 324$$

$$n^2 - \frac{123n}{11} + \left(\tfrac{123}{22}\right)^2 = \tfrac{108}{11} + \tfrac{15129}{484}$$

$$= \frac{4752 + 15129}{484}$$

$$= \tfrac{19881}{484}$$

$$n - \tfrac{123}{22} = \pm \tfrac{141}{22}$$

$$\therefore n = \pm \tfrac{141}{22} + \tfrac{123}{22}$$

$$= 12, \text{ or } -\tfrac{9}{11}.$$

$\therefore$ Number of shot in a side of the base of the triangular pile = 12.

Number of shot in the triangular pile

$$= \tfrac{1}{6} \times 12 (12 + 1) (12 + 2)$$

$$= 2 \times 13 \times 14$$

$$= 364;$$

Number of shot in the square pile

$$= 364 \times \tfrac{175}{13}$$

$$= 28 \times 175$$

$$= 4{,}900.$$

General.

1. DIOGENES.—

Pendi	=	Pas. inf. of pendo 3.
Pependi	=	Perf. indic. of pendo 3 and pendeo 2
ĕdi	=	I eat.
ēdi	=	I bring forth.
incĭdo	=	I fall on.
incīdo	=	I cut into.
O te miserum	=	Accus. of exclamation.
O tu miser	=	Vocative (address).
Plus	=	Both subst. and adverb.
Magis	=	used to form comparative of adjectives not inflected in the comparative; always an adverb.

2. CODEX.—Among the books to be studied you may place Sully's 'Psychology' and Bain's 'Manual,' and some of Hamilton's Lectures; 'Logic,' by Bain, Vols. I. and II.; 'Formal Logic,' by Neville Keynes; parts of Mill's 'Logic,' and the new book, by Venn, should be read. For Ethics and Ethical systems there are many excellent books. Sidgwick's 'Ethics' is a fine book; his 'History of Ethics' is also a useful manual.

3. CELT.—Among the Grammars, which are now numbered by scores, we should call your attention to Morris's 'Manual,' 1s. That you imply is too dear. You may, after all, not be able to find one containing exactly all you want. You had better send half a dozen post cards to the chief publishing houses and ask them to forward you a specimen copy of the sort of book you want.

4. FLODDEN FIELD.—Choose any science you like. They are of equal value. But in doing so, choose one that you can study at first hand. If you are in the country try Botany; if you can do experiments try Chemistry; say, the new alternative first stage. If you can do no real physical science, work at Mathematics.

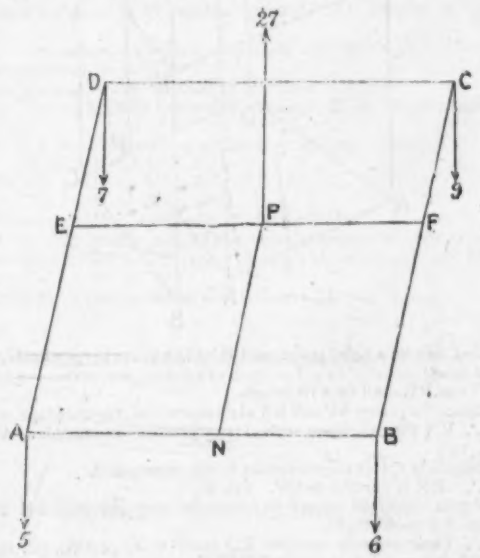
5. FRANCES.—We cannot tell you. Nor do we see what use it is to know, unless you knew at the same time the marks given to each of the other subjects. The number of marks given at the Christmas Examinations for Science does not lead us to think that the figure you name is correct. It may be the lowest mark that could be given; but surely the actual marks would depend upon the answer given, and vary accordingly.

6. LL.—In order to earn Science Grants you must possess (see Science and Art Directory, page 30, 1888 edition). You had better sit again, and get the advanced stage first class. You will not find much difficulty in so doing.

7. AURORA.—If the teacher used the Manual of Thomé, published by Longman, she would find all she wanted. Let her get the Syllabus published by the Department (6d.); it contains some very useful hints of a practical kind. By attending to them disappointment may be avoided. The instruction should be made thoroughly practical. The pupils could use, say, Hooker's 'Manual,' 1s., and also a cheap first book, written expressly for the examination in question, like those of Collins and Co.

8. LEONIDAS.—Large hand not good. Strokes not straight, letters not of recognised forms. The copy is legible; that is a great merit, but beyond that the specimen has no merit. (50.) Much the same can be said of the small hand. (60.) The capitals would have been better if the paper, pen and ink had been good. Do not be discouraged. If you would learn to write, act accordingly. Get a good set of copybooks (try Cowham's, J. Hughes), and practise a few minutes every day for three months, and then send us a couple of specimens.

9. TRISTIA.—Weights of 5, 6, 9, and 7 lbs. respectively are hung from the corners of a square 27 inches in the side. Find by taking moments about two adjacent edges of the square the point where a single force must be applied to the square to balance the effect of the forces at the corners. (*Matriculation*, 1885.)



Let the weights of 5, 6, 9, and 7 lbs. respectively hang at the four angles A, B, C, D.

Let P be the point required. From P draw PN perpendicular to AB.

Let AN = x and PN = y.

Resolving the five forces 5, 6, 9, 7, 27, acting at A, B, C, D, and P respectively along AB, we have

$$6 \cdot 27 + 9 \cdot 27 - x \cdot 27 = 0,$$

and resolving along AD, we have

$$7 \cdot 27 + 9 \cdot 27 - y \cdot 27 = 0,$$

$$\therefore x = 15 \text{ and } y = 16.$$

Along AB measure AN = $\frac{15}{27}$ of AB, and along NP measure NP = $\frac{16}{27}$ of AB, and this will fix the point P.

This can be proved by taking E in AD, so that AE is $\frac{7}{27}$ of 27 units from A, and F in BC, so that BF is $\frac{9}{27}$ of 27 units from B. Joining EF, and taking EP = $\frac{16}{27}$ of EF, we shall find P and N to be 16 and 15 units respectively from AB and AD.

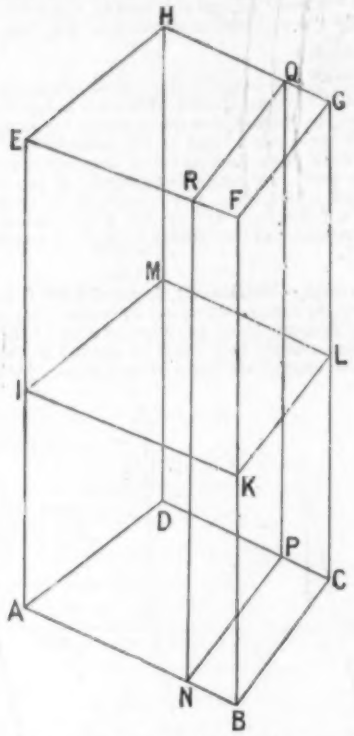
$\therefore$ Point is (27 − 16) in. and (27 − 15) in. from nearest sides of square, or 11 and 12 in. respectively.

Geometry.

1. IVANHOE.—Define a right prism, and show that the sections of such a prism by planes perpendicular to the base are rectangles, and that the sections by planes parallel to the base are similar and equal polygons.

A prism is a solid whose ends are parallel, equal and like plane figures, and its sides connecting these ends are parallelograms.

If the planes of the sides are perpendicular to the planes of the ends, the prism is called a right prism.



Let AG be a right prism, and RNPQ a plane perpendicular to the base.

Then RP shall be a rectangle.

Since the planes RP and RA are perpendicular to the plane AC,

∴ RN their common section is perpendicular to the plane AC. (xi. 19.)

Similarly QP is perpendicular to the same plane.

∴ RN is parallel to QP. (xi. 6.)

Again since the planes EG and AC are parallel, and the plane RP meets them,

∴ Their common sections RQ and NP are parallel. (xi. 16.)

Wherefore RP is a parallelogram.

Since RN is perpendicular to the plane AC,

∴ RNP is a right angle, and RP is a rectangle.

Q. E. D.

Let IKLM be a plane parallel to the base.

Then IL shall be equal and similar to the base ABCD.

Since the plane IL is parallel to the plane AC, and the plane IB cuts them,

Their common sections IK and AB are parallel, and AI is parallel to KB.

∴ IB is a parallelogram, and IK is equal to AB.

Similarly we can show that KL is equal to BC, LM to BD, and MI to DA, or the two planes are equilateral.

Again since IK is parallel to AB and KL to BC,

∴ Angle IKL is equal to the angle ABC. (xi. 10.)

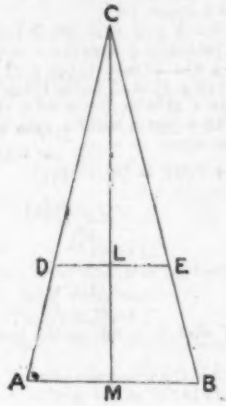
Similarly we can prove that the angle KLM is equal to the angle BCD, LMI to CDA, and MIK to DAB;

∴ The two planes AC and IL have their corresponding sides and angles equal, that is, they are equal and similar.

Q. E. D.

Note.—The second part of the query might have been obtained from a work on Solid Geometry.

2. THOMAS WILSON.—Show how to draw a plane which shall be parallel to the base of a pyramid, and cut it in a section of given area, equal to a given square; and if a triangular pyramid be cut by a plane drawn parallel to two opposite edges, show that the section is a parallelogram. (*Science and Art.*)



Let AB be a side of the base of pyramid, and CAB a face of the pyramid.

Any section parallel to the base will be a similar figure to the base.

Let DE be the straight line where the section required meets the face CAB.

Then $AB^2 : DE^2 =$ Base : Section.

Let FG be the side of the square equal to the base, and HK the side of the given square.

$\therefore AB^2 : DE^2 = FG^2 : HK^2$,

or $AB : DE = FG : HK$.

Take M the middle point of AB and join CM, cutting DE in L, which is the middle point of DE.

Triangles CLD and CMA are similar.

$\therefore CL : LD = CM : MA$,

or $CL : CM = LD : MA$

$= DE : AB$

$= HK : FG$.

Hence the construction.

Describe the square equal to the base.

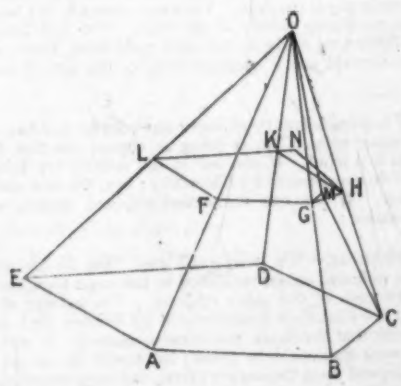
Bisect AB in M and join CM.

Divide CM in two parts in L,

so that CL : CM = side of given square : side of square equal to base. (VI., 10.)

Through L draw a plane parallel to the base.

Then the area of this section shall be equal to the given square. Q.E.F.



Let ABCD be a triangular pyramid on the base BCD.

In AD take any point E, and through it in the plane ACD draw EF parallel to CD; and in the plane ABD draw EG parallel to AB.

Let the plane passing through E, F, and G meet BC in H.

Then the section FHGE shall be a parallelogram.

In ACD draw AK perpendicular to CD, cutting FE in L; and from K draw KM at right angles to CD, cutting HG in M.

Then since CKM and CKL are both right angles, CK is perpendicular to the plane passing through K, L, M. (XI. 4.)

Because CK is perpendicular to the plane KLM,

∴ The planes MHCK and FCKL are both perpendicular to the plane KLM; (XI. 18.)

And since FL is parallel to CK, which is perpendicular to the plane KLM,

∴ FL is perpendicular to the plane, and therefore the plane FHML is perpendicular to the plane KLM;

But the plane MHCK is perpendicular to the plane LMK;

∴ Their section MH is perpendicular to the plane, (XI. 19.)

And therefore HM is parallel to FL, (XI. 6.), that is HG to FE.

Since FE is parallel to CD,

$$AE : ED = AF : FC,$$

and since EG is parallel to AB,

$$AE : ED = BG : GD,$$

$$\therefore AF : FC = BG : GD.$$

Again, since HG has been proved parallel to CD,

$$BG : GD = BH : HC,$$

$$\therefore AF : FC = BH : HC,$$

Wherefore FH is parallel to AB.

But EG is parallel to AB,

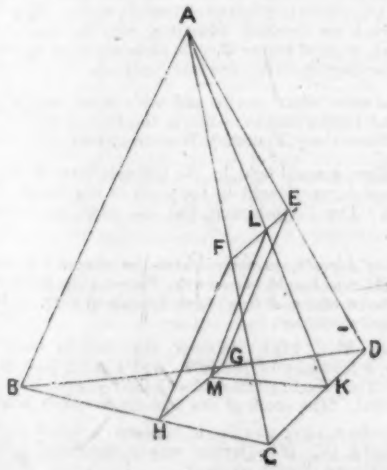
∴ FH is parallel to EG, (XI. 9.)

And FE has been proved parallel to HG,

∴ FHGE is a parallelogram. Q.E.D.

Cor.—If two planes intersect, any plane which cuts one of the planes in a straight line parallel to their common section, cuts the other also in a straight line which is parallel to their common section.

3. RALPHO.—If two similar rectilineal figures be situated in such a manner that two sides of the one are parallel respectively to the two homologous sides of the other, prove that every side of the one is parallel to the homologous side of the other, and that the lines joining homologous vertices all pass through a common point.



Let ABCDE and FGHKL be two similar rectilineal figures, and let FG and GH be parallel to the homologous sides AB and BC.

Then HK shall be parallel to CD, KL to DE, and LF to BA.

Proof.—Since FG, GH meeting in G are parallel to AB, BC meeting in B,

∴ The plane FGHKL is parallel to the plane ABCDE. (XI. 15.)

If the plane passing through HCD do not cut the plane FGHKL in HK, let it cut it in HN.

Then HN is parallel to C.D. (XI. 16.)

And since BC, CD meeting in C are parallel to GH, HN melting in N,

∴ The angle BCD is equal to the angle GHN;

But the angle BCD is equal to the angle GHK,

∴ The angle GHN is equal to the angle GHK, which is impossible.

In the same way it can be shown that the section of plane passing through HCD cannot be other than HK.

∴ HK is parallel to CD.

Similarly it can be proved that KL is parallel to DE, and LF to EA. Q.E.D.

If AF, BG, CH, DK, and EL be produced, they will pass through a common point,

Let AF and BG be produced in the plane FABG till they meet in O, and join OC, OD, and OE.

Then OABCDE is a pyramid, and OC shall pass through H, GD through K, and OE through L.

Proof.—If OC do not pass through H let it meet the plane in M, and join GM.

Let M be without GH.

Since the plane FGM cuts the pyramid OAC parallel to the base,

∴ The section is similar to the base, and the angle FGM is equal to the angle ABC;

But the angle ABC is equal to the angle FGH,

∴ The angle FGM is equal to the angle FGH, which is impossible.

If M is in GH, since the section is similar to the base,

$$FG : GM = AB : BC;$$

But $FG : GH = AB : BC,$

$$\therefore FG : GM = FG : GH,$$

Wherefore GM = GH, which is impossible.

It can thus be shown that OC meets the plane FH in no other point but H, that is, CH passes through O, where AF and BG meet.

Similarly it can be shown that DK and EL pass through O. Q.E.D.

Note.—This problem being the converse to one proved independently of it, we need not hesitate to prove it indirectly.

Certificate Examination, 1888.

Female Candidates.

FIRST YEAR.

History.

1. In what manner did the Feudal System supply the military requirements of the country? What causes led to the adoption of other methods of providing army?

(1) Under the Feudal System England was divided into 60,215 knight's fees, each fee containing enough land to support a knight or armed horseman, who was under the obligation to undergo military service for 40 days in the year, and to defend the person and property of the king.

If land was held from a mesne lord by sub-infeudation, the military service was still owing to the king, and not the mesne lord.

This territorial military system was compulsorily abandoned because of—

A The general decay of the Feudal System through—
- (*a*) The alienation of land;
- (*b*) The growth of towns;
- (*c*) The abuse of its incidents, and
- (*d*) The enormous changes in the social system.

B
- (*a*) Its inadequacy in case of foreign or extended wars;
- (*b*) The decline of chivalry;
- (*c*) The commutation of military service for scutage, and
- (*d*) The consequent growth of professional and mercenary soldiers.

2. Give a short account of the Parliaments known respectively as The Mad, The Good, The Wonderful, The Short.

(2) (*a*) *The Mad Parliament* met at Oxford in 1258, and commenced its proceedings by filling all the important offices with its partisans. It then placed the control of affairs in the hands of a reforming oligarchy by providing—a supreme council of fifteen persons—that four knights should be appointed from each county to investigate charges against the king's government—that the freeholders of each county should annually elect a new sheriff—that all the sheriffs, the treasurer, the chancellor, and the justiciary should render their accounts annually, and that Parliament should meet thrice a year.

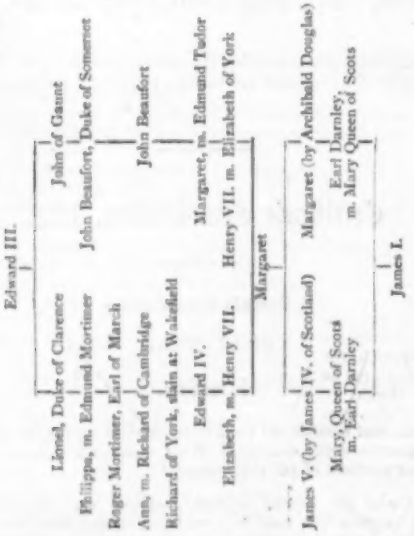
(*b*) *The Good* (*or Blessed*) *Parliament* sat from 1360—77, and formed itself into two orders, as at present, instead of four as previously. It was exceedingly active in legislation, was consulted by the king as to making peace with France, and it secured the extremely important concession of having its decrees converted *at once* into *Statutes* (after receiving the Royal assent) instead of being embodied in *Ordinances* by the Royal Council at the close of the session.

(*c*) *The Wonderful Parliament* met in 1388, and was under the influence of the 'Lords Appellant,' of whom Gloucester was the chief. It caused the Chief Justice and the Lord Mayor to be executed as favourites of the king. In the following year, by proclamation, the king took the power into his own hands.

(*d*) *The Short Parliament* was the fourth during the reign of Charles I. It met in April, 1640, and was dissolved before it had sat three weeks, because it applied itself to the discussion of grievances, and not to furnishing supplies.

3. Trace the descent of James I. from Edward III.

(3)


Edward III.
Lionel, Duke of Clarence
Philippa, m. Edmund Mortimer
Roger Mortimer, Earl of March
Ann, m. Richard of Cambridge
Richard of York, slain at Wakefield
John of Gaunt
John Beaufort, Duke of Somerset
John Beaufort
Margaret, m. Edmund Tudor
Edward IV.
Elizabeth, m. Henry VII.
Henry VII. m. Elizabeth of York
Margaret
James V. (by James IV. of Scotland)
Mary, Queen of Scots m. Earl Darnley
Margaret (by Archibald Douglas)
Earl Darnley, m. Mary Queen of Scots
James I.

4. 'In the Middle Ages resistance was an ordinary remedy for political distempers.' Give instances of this from English History.

(4) 1. Magna Charta (1215) extorted from John by the Barons in arms, and its violation followed by calling in Louis of France.

2. The Barons' war against Henry III. (1264—5).

3. Two insurrections of the Barons against Edward II.'s favourites, 1310 and 1322.

4. The insurrection of 'the Appellant Lords' against Richard II. (1386).

N.B. Note that the question only applies to the middle ages, and that popular outbreaks have not been enumerated, but only the armed resistances that were in some sort constitutional.

5. Mention any steps taken by the Norman or Plantagenet kings to check the power of the church.

(5) *William the Conqueror* exacted homage from the bishops, allowed no royal vassal to be excommunicated without his licence, permitted no synod to legislate without his assent, and no papal letters to be received without his express permission. He also sternly refused to do fealty for his realm to the Pope.

Henry I. on the dispute concerning investiture, practically secured the right of nominating bishops and abbots.

Henry II. caused the 'Constitution of Clarendon' to be enacted, which placed the clergy more in the hands of the king and the civil law, limited the power of ecclesiastical punishment, and repelled papal usurpations.

In Edward III.'s reign the 'Statute of Provisors' was passed which forbad letters of presentation to benefices to be brought into the realm contrary to national rights.

In Richard II.'s reign the 'Statute of Præmunire' enacted severe punishments against those who procured any 'bulls or processes' &c., from Rome touching the king, his crown and his realm.

6. How are the following Scottish kings connected with English history:—Malcolm Canmore, David I., William the Lion, David II., and James I.?

(6) *Malcolm Canmore or III.* was brought up at the court of Edward the Confessor, and the Norman conquest involved him in many a serious struggle. He married Margaret, sister of Edgar Atheling, invaded England twice, but was compelled to do homage for his lands within English territory. He was slain in 1093 whilst besieging Alnwick castle.

David I. was the uncle of Matilda, daughter of Henry I. Upon Stephen's usurpation he invaded England, but was defeated at Northallerton in the battle of the Standard.

William the Lion followed his cousin Henry II. to his foreign wars, hoping to be rewarded by the restitution of Northumbria. Failing this, however, he invaded the province, but was captured by the English, detained in custody in Normandy, and was not released until he had consented to do homage for his whole kingdom, and to admit garrisons into his principal towns and fortresses.

David II., son of Robert Bruce, was defeated and taken prisoner at the battle of Neville's Cross, near Durham. For eleven years he was detained in captivity, but at last was ransomed for 100,000 marks.

James I. was, whilst still a boy and before his accession, captured by the English whilst voyaging to France. His father almost immediately died, but James, now king, had to endure a captivity in England of nineteen years. Here, however, he received an excellent education, and he married Joanna Beaufort, niece of Henry V. On his return home he did much to introduce English civilization into Scotland.

7. Between what parties and with what results were the following battles fought:—Sluys, the Fair of Lincoln, Solway Moss, Shrewsbury, Fontenoy, Worcester, Vittoria? Give dates.

(7) *Sluys*, a naval fight in the Channel between the French and English, was fought in 1293, not in the course of regular warfare. The English won, but the result was a war with France.

Fair of Lincoln, so named from the amount and richness of the spoils, was fought between the French (who had been called in by the barons) and English at Lincoln in 1217. The former were totally defeated.

Solway Moss, 1542, between the Scotch, under Oliver Sinclair, a favourite of James V., and a small body of English horse. The Scotch, disaffected with their general, either surrendered or fled. The shock of this disaster hastened James' death.

Shrewsbury, 1403, was fought between the rebellious Hotspur and Henry IV. The former was defeated and killed, and Henry's throne thereby secured.

Fontenoy, between the French under Saxe, and the English under Cumberland, was contested near Tournay in 1745. The English, being unsupported by the Dutch, were repulsed, but retired step by step in splendid order. As a result Tournay and other towns surrendered to the French.

Worcester, 1651, between Charles II. and Cromwell, resulted in the utter rout of the Royalists, Charles becoming a wandering fugitive, having a price set on his head.

Vittoria, a battle of the Peninsular war, was fought between Joseph Buonaparte and Wellington in 1813. The French were completely routed, and lost immense stores of treasure and military stores. By this battle the fate of Spain was decided.

8. Give a summary of the historical events connected with any one of our old provincial towns with which you are acquainted.

(8) *York*:—

211 Emperor Hadrian died at York.
306 Emperor Constantius died at York.
867 Danes captured York, and made it a Danish burgh.
1066 Edwin and Morcar defeated near York by Harold Hardrada.
1069 York taken and sacked by William I.
1190 Massacre of Jews at York Castle.
1251 Alexander III. of Scotland married Margaret, daughter of Henry III., at York.
1461 Battle of Towton, near York.
1534 York captured by the 'Pilgrims of Grace.'
1569 Conference respecting Mary, Queen of Scots, held at York.
1640 Council of Peers at York.
1642 Charles I. withdrew to York.
1644 Earl of Newcastle besieged in York by parliamentary forces.

9. What were the chief points at issue between Charles I. and his Parliament after he had given his assent to the Petition of Right? What part did Ireland and Scotland play in the war which followed?

(9) (*a*) After the Petition of Right (1628) Charles ruled absolutely for eleven years (1629-1640), disregarding alike the Petition and the Magna Charta, even according to Clarendon's account. He employed the illegal tyranny of the Courts of Star Chamber and High Commission, levied ship money and other unlawful imposts, and was suspected of complicity with the Irish Rebellion. The final rupture arose upon Charles' refusal to concede to the Parliament, (*a*) possession of the forts, (*b*) command of the militia, (*c*) control of the king's ministers, council, and judges, (*d*) regulation of the education and marriage of the royal children, (*e*) disfranchisement of the popish peers, (*f*) bringing up of Romanist children as Protestants, and (*g*) reformation of church government and the liturgy.

(*b*) *Scotland* had previously in 1637 been aroused to active hostility against Charles by an attempt to impose an English-made liturgy upon it; and in 1643 by a treaty with the parliament they engaged to find 21,000 men to be paid by the English. Accordingly in 1644 they entered England, but were besieged in Sunderland by the Earl of Newcastle. Being relieved by Fairfax the united forces shut up the king's army in York, and after Cromwell and Rupert had brought reinforcements to their respective sides, took part in the decisive battle of Marston Moor.

In Scotland itself, during September, 1644, the royalist Montrose gained the battle of Tippermuir, and in the following year that of Kilsyth; but a month later Leslie ruined Charles' cause by defeating Montrose at Philiphaugh.

In April, 1646, the king surrendered to the Scots at Newark, who retired to Newcastle and transferred him to the Parliament on consideration of the arrears of pay being forthcoming.

In 1648, after negotiations with Charles, they invaded England on his behalf, but were routed at Preston and pursued home.

(*c*) *Ireland* furnished soldiers to Montrose's army, and under Ormond, in 1648, reduced the parliamentary cause to the lowest ebb, the king having previously first purchased the neutrality of the Irish rebels and afterwards their active co-operation. However, a sortie from Dublin forced Ormond to raise the siege of that capital, and Cromwell soon afterwards promptly reduced the whole country. This campaign, however, was fought after Charles' execution.

10. Mention three dramatists who lived in the reign of Elizabeth, and three poets and three prose writers of the Stuart period. Mention in each case one of the author's principal works.

(10)

Reign.	Author.	Character of Writings.	Principal Work.
——	——	——	——
Elizabeth	1. Shakespere (1564—1616)	Dramatic	Macbeth
,,	2. Ben Jonson (1574—1637)	,,	Alchemist
,,	3. Marlowe (1563—93)	,,	Tamburlaine the Great
Charles II.	4. Milton (1608—74)	Poetic	Paradise Lost
,,	5. Butler (1612—80)	,,	Hudibras
James II.	6. Dryden (1631—1700)	,,	Translations of Virgil
Charles II.	7. Bunyan (1628—88)	Prosaic	The Pilgrim's Progress (Allegory)
,,	8. De Foe (1661—1731)	,,	Robinson Crusoe
William & Mary	9. Addison (1672—1719)	,,	Papers in Spectator.

11. Give a short sketch of the life and political career of *one* of the following statesmen:—Somers, Walpole, the younger Pitt.

(11) *Pitt.*—William Pitt, the second son of the renowned Earl of Chatham, the greatest statesman that this country has ever produced, was born 1759. He was carefully educated at home until he was fourteen, when he went to Cambridge. In 1780 he was called to the bar and entered Parliament as member for Appleby, the year following taking rank at once as one of the foremost debators, and even securing office. He became Chancellor of the Exchequer in his twenty-fourth year (1782) and Prime Minister in 1783, and till 1806, with the exception of three years, was at the head of affairs. Pitt had been carefully trained in oratory, finance, and general statesmanship, by his illustrious father, and was pre-eminently the offspring of our parliamentary system. The influence of his personality was amazing, and his career whilst holding office is the history of his country. He died a martyr to duty, a patriot, the final blow being Napoleon's victory at Austerlitz. During his pre-eminence the French Revolution, the Irish Rebellion, the Mahratta Wars, the Act of Union, the reorganization of Indian affairs all took place.

His policy was different during the former and latter parts of his administration. He was favourable to reform, to Catholic emancipation, the liberty of the press, and to all truly liberal measures, and held sound opinions with respect to the status of the throne. The turning point of his career was the outbreak of the French Revolution, which partially changed his own opinions, and partially compelled him into alien courses through parliamentary exigencies.

His latter measures were frequently repressive, unpopular, and retrograde, but are justified by what he conceived to be the paramount necessity of combatting, at any cost, revolutionary theories and French preponderance. Pitt's financial administration, though faulty *in many respects*, has on the whole won just applause. He greatly reduced the duties on tea and foreign spirits, and consolidated the respective duties of Customs, Excise and Stamps. His Sinking Fund was, however, illusive.

12. Give a short account of any statutes passed under the Plantagenet and Tudor sovereigns which directly affected the well-being of the lower classes.

(12) (1) In 1349 and 1351 were passed the '*Statutes of Labourers*,' which provided (*a*) that every landless and unemployed labourer should serve any employer requiring him, (*b*) that only the customary wages should be given, and (*c*) that the labourer should not quit his parish in search of better employment, under pain of branding in the forehead.

(2) By a statute of 1362 law pleadings were henceforth to take place in English.

(3) In 1536 and 1539 the Monasteries, which, despite their corruption, had been to a considerable extent relievers of the poor, were suppressed.

(4) In 1562 power was given to enforce labour on the idle, and settlement on the wandering, and each town and parish was held responsible for the relief of its poor, and the employment of its mendicants. The justices were moreover empowered to levy contributions for these purposes.

(5) In 1572 a statute was passed authorising Houses of Correction, in which the vagabond class should be forced to labour, to be established. These are the first recognitions of the great distinction between poverty and vagabondism.

(6) By '43rd of Elizabeth' (1601) previous legislation was so consolidated, that the statute, with some modifications, remained the basis of our Poor Law until 1834.

13. Mention any occasion when an invasion of England was threatened or attempted by foreign powers.

	DATES.	ENGLISH SOVEREIGNS.	FOREIGN POWERS.	RESULTS.
	——	——	——	——
1	B.C. 55, 54	None	Romans (Cæsar)	Temporary and partial submission
2	43—410	None	Romans	Complete conquest but final withdrawal
3	449—586	None	Saxons	Conquest and settlement
4	787—1098	Many	Danes	Partial success and occupation of country
5	1066	Harold II.	Normans (William I.)	Conquest
6	Invasions by the Scotch and Welsh are too numerous to particularise.			
7	1216	John	French (Louis)	Defeat of invaders at Lincoln
8	1588	Elizabeth	Spain (The Armada)	Defeat of invaders [exiled Stuarts
9	From 1688 to 1748 many abortive attempts or plans were made or concocted by France and Spain on behalf of the			
10	1797	George III.	France	Invaders surrendered at Fishguard
11	1805	George III.	French (Napoleon)	French defeat at Trafalgar

14. How and when was the woollen manufacture introduced into England? What were the chief seats of this industry in the time of the Stuarts, and what improvements in the process of manufacture have been introduced since that time?

(14) (*a*) In the time of the Conqueror a considerable number of woollen manufacturers, driven from the Netherlands by an inundation, settled at Carlisle.

(*b*) In Henry I's reign a colony of Flemings settled in Pembrokeshire and established the woollen manufacture there.

(*c*) Edward III. succeeded in inducing a large number of Flemish cloth weavers to immigrate to England.

The chief seats of this industry in the time of the Stuarts were the W. of England, Pembrokeshire, Yorkshire and Norfolk, Norwich being the most important centre.

The chief improvements in the manufacture, have been effected by means of

(*a*) A variety of inventions such as Hargreaves' spinning jenny, Arkwright's spinning frame, Cartwright's power-loom and combing machine. (These, although first applied to cotton have been adapted to wool)—

(*b*) The application of steam-power, which in many processes, as *fulling*, allows greater power or pressure to be applied—

(*c*) Better dyes, discovered through chemical knowledge—and

(*d*) Better teasles, obtained by careful cultivation.

15. Mention any historical novels which illustrate various periods of English History, naming in each case one of the principal characters represented in it.

(15)

	NOVEL	AUTHOR	PERIOD DEPICTED	A PRINCIPAL CHARACTER
	——	——	——	——
	Last of Saxons	Bulwer Lytton	Harold II.	Edith
	Hereward	C. Kingsley	William I.	Torfrida
	Ivanhoe	W. Scott	Richard I.	Rebecca
	Last of the Barons	Bulwer Lytton	Wars of Roses	Warwick
	Westward Ho!	C. Kingsley	Elizabeth	Amyas
	Kenilworth	W. Scott	Elizabeth	Leicester
	Buccaneer	Mrs. Hall	Commonwealth	Cromwell
	Esmond	W. M. Thackeray	Anne	Marlborough
	Vanity Fair	W. M. Thackeray	George III.	Becky Sharpe
	Barnaby Rudge	C. Dickens	Gordon Riots, etc.	Dolly Varden

Female Candidates.

SECOND YEAR.

History.

1. Mention and describe any instance which the 18th century affords of (1) a Popular Riot, (2) a Speculative Mania, (3) a Religious Revival, (4) a Panic in London, and (5) an Outbreak of Religious Fanaticism.

(1) *1. Porteous Riot* (1736). A smuggler, Wilson, had secured the popular favour by singular generosity in securing a comrade's escape. At his execution the mob attacked the guard, and its commander, Captain Porteous, was compelled to order his men to fire upon the crowd. This was done with fatal result. Subsequently Porteous was sentenced to death for murder but reprieved; whereupon the enraged populace forced the prison and hung the unhappy officer upon a dyer's pole. No efforts could secure the apprehension of any of the rioters.

2. South Sea Bubble (1720). The South Sea Company secured from the government, for 7½ millions, the irredeemable annuities of the last two reigns. So glaring were the hopes held out to the holders that they exchanged their claims for South Sea stock, and on the passing of the South Sea Bill money came in in millions when new subscriptions were called for. The £100 shares went up to £1000, and new companies, many with absolutely ridiculous objects, sprung up innumerably. But in about five months the bubble burst, thousands were ruined and public credit was greatly damaged. Walpole, in 1721, by his wise measures greatly alleviated the distress.

3. The Methodist Revival (1739) was the outcome of the preaching of John Wesley, Charles Wesley, Whitfield, and others. It was aroused by the criminal apathy of the Church of England in general and its clergy in particular. Two sects were formed, disagreeing on the doctrine of predestination, the Wesleyan Methodists and the Calvinistic Methodists. The former constitute a most powerful dissenting body, and in addition the modern energy of the church and the zeal of its ministers is mainly owing to methodistic stimulus.

4. Commercial Panic in London in 1797 was so great that the run on the Bank of England reduced the reserve to £1,300,000, whilst possible immediate claims amounted to £8,700,000. By order of Privy Council payment in specie was suspended, and the value of the bank note was necessarily much depreciated. Accordingly resumption of specie payments had to be gradually reintroduced and was not fully accomplished until the lapse of 22 years.

5. Gordon Riots (1780). In 1778 a bill to remove certain penalties from Romanists was introduced and met with violent and organised opposition from numerous associations, at the head of which was Lord George Gordon. A monster petition was drawn up, and was escorted to Parliament by 80,000 people. Of these the rabble, re-inforced by the scum of London, became unmanageable, destroyed Romanist chapels, forced open and fired Newgate, and burnt Lord Mansfield's library. For five days London was at their mercy, and then the riot was suppressed by military force, 500 of the mob being killed or wounded, whilst others were subsequently hung. Lord Gordon was, however, acquitted on being arraigned for high treason.

2. Describe the circumstances in which Ireland obtained legislative Independence. How long did she retain it?

(2) In consequence of all our troops being required for foreign service, the defence of Ireland was entrusted to volunteers. In 1782, 88,000 Irish were in arms. Taking advantage of England's embarrassments these demanded legislative Independence, and accordingly the same year a bill was passed repealing '6 of George I.' and thereby granting the demand. This concession for a time pacified the people, but ultimately success only induced further claims as to religious equality, parliamentary reform, and social amelioration, many of which were perfectly righteous. Discontent daily increasing at last culminated in a rebellion, which induced Pitt to persuade the Irish Parliament to consent to a legislative union with that of Great Britain. Its legislative Independence thus lasted about eighteen years.

3. What do you know of the (1) Excise Scheme, (2) the Quadruple Alliance, (3) the Drapier Letters, and (4) the Alien Bill?

(3) 1. In 1733 Walpole introduced a great *Excise Scheme* in order to advance trade and check irregularities in collecting the revenue. So great was the waste that out of £750,000, the gross produce of the tobacco tax, only £160,000 was the net produce.

He proposed that tobacco and wine should be brought under the laws of the excise, and for the accommodation of merchants suggested a system of bonding.

So violent was the opposition, especially against an increase in the number of excise officers, that the project fell through.

2. The Quadruple Alliance (1718) between England, Austria, France, and Holland was concluded against the ambition of Spain, which was endeavouring to regain its losses under the Treaty of Utrecht. The Spaniards were defeated off Cape Passaro (1718), at Glenshiels in Scotland (1719), and Vigo was captured by the English. The French, too, successfully invaded Spain, which accordingly gave way, and peace was concluded in 1720.

(3) *The Drapier Letters* (1724) were written under an assumed personality by Dean Swift. They were directed against Mr. Wood, who had obtained a patent to coin farthings and halfpence, in order to obviate the exceeding scarcity of copper money in Ireland.

Although the letters were infamously false they roused Ireland almost to rebellion, and the patent was therefore withdrawn, and Mr. Wood compensated.

4. *The Alien Bill* (1714) was introduced to confirm certain provisions in the Act of Settlement. It was conceived by a jealousy of foreigners, and provided that no Bill for the naturalisation of any person should be received without a clause disqualifying him from sitting in Parliament, enjoying any official place of trust, and receiving grants of lands.

Another and more important Alien Bill was passed in 1793, placing all foreigners under strict surveillance, and empowering the Secretary of State to remove any suspected ones out of the realm. Passed originally only for one year, it was repeatedly renewed and only finally abandoned in 1826.

4. Mention and describe any commercial treaties made with foreign countries during the 18th century.

(4) In the majority of instances commercial articles were inserted in peace treaties instead of separate pacts being made. For instance, in 1713, by the Treaty of Utrecht, the question of Newfoundland fishing was settled with France, and in connection with it the English were allowed the Assiento, or contract for supplying the Spanish Colonies in South America with 4,800 negroes annually for 30 years. The *commercial treaty of Utrecht* is often spoken of. In 1748 the contract was renewed by the treaty of Aix-la-Chapelle for four years.

The treaty of Seville, 1729, was principally concerned with the regulation of this trade.

In 1750, by a *special commercial treaty with Spain*, we abandoned the right and received compensation.

In 1703 we concluded with Portugal the *Methven treaty*, by which our woollens were admitted into Portugal, and we taxed port wine one-third less than French wines.

The most important commercial treaty was, however, that respecting navigation and commerce, concluded *with France in* 1786. By it the most liberal provisions allowing perfect freedom of intercourse with France were enacted.

In addition, commercial treaties, such as that between *Great Britain and Denmark* (1780), respecting contraband of war, are numerous.

5. 'Bute was hated with a rage of which there have been few examples in English history.' Give reasons for the existence of this feeling.

(5) (*a*) During the youth of George III. Bute reigned supreme in the young Prince's household, and through his incompetence George's political education was much neglected, whilst personal influence over the mind of the future sovereign was assiduously sought.

The general public credited Bute with purposely debasing the Royal mind in order to secure ascendancy.

(*b*) The constitutional supporters of parliamentary and ministerial power detested the influence and 'back-stairs' intrigues of a Royal favourite.

(*c*) As the supplanter (1761) of their favourite, Pitt, the populace hated Bute with a fervent hatred.

(*d*) Bute was also the principal promoter of the unpopular Treaty of Paris, which closed the Seven Years' War.

(*e*) John Wilkes, who was generally supposed to be the champion of the freedom of the press, had indefatigably excited national feeling against Bute in the pages of the 'North Briton.'

(*f*) Bute was a Scotchman.

6. What did England gain by the Treaty of Utrecht? Mention the chief victories we gained, and any losses we suffered during the war which led to it.

(6) (*a*) By the treaty of Utrecht we secured the recognition of the Protestant succession of the House of Hanover, the

abandonment by France of the Pretender and his banishment from French territory, the relinquishment of the union of the crowns of France and Spain, the demolition of the port of Dunkirk, the cession of Hudson's Bay, and the acknowledgment of our right to Nova Scotia, St. Christopher, and Newfoundland. From Spain we obtained Minorca, Gibraltar, and the Assiento contract.

(*b*) Naval victory of Vigo (1702), Schellingberg and *Blenheim*, naval victory of Malaga and capture of Gibraltar (1704), Ramilies (1706), Oudenarde (1708), Malplaquet (1709).

(*c*) Failure of attempt upon Cadiz (1702), Defeat of Almanza and surrender of Galway (1707), surrender of Stanhope (1710).

7. Who were the authors of the following works:—'Night Thoughts,' 'A Short Way with Dissenters,' 'The Tale of a Tub,' 'The Rape of the Lock,' 'The Campaign,' 'The Rights of Man.' Give a short sketch of the life of one of the authors.

(7)

WORK.	AUTHOR.	PERIOD OF LIFE.
Night Thoughts	E. Young ...	1681—1765
A Short Way with Dissenters	Defoe ...	1661—1731
The Tale of a Tub	Swift ...	1667—1745
The Rape of the Lock ...	Pope ...	1688—1744
The Campaign	Addison ...	1672—1719
The Rights of Man	Paine ...	1737—1809

Joseph Addison was born in Wiltshire in 1672. Having spent four years at the Charterhouse School, at fifteen he proceeded to Queen's College, Oxford. In 1695 he obtained a pension of £300, through the influence of Somers, in order to enable him to travel, and in 1701 he wrote from Italy his poetical epistle to Lord Halifax. Returned home he wrote, in order to commemmorate the victory of Blenheim, the 'Campaign,' which procured for him the commissionership of appeals. In 1709 he went to Ireland as secretary to the Lord Lieutenant. From this time, until 1714, he contributed to the 'Tatler,' 'Spectator,' and 'Guardian.' His tragedy of 'Cato' appeared in 1713. In 1716 he unfortunately married the Countess of Warwick, and the following year retired on a pension of £1,500. His death took place in 1719, and his remains were interred in Westminster Abbey.

8. 'Wilkes became the chief instrument in bringing about three of the greatest advances our Constitution has ever made? Explain this statement.

(8) (*a*) In 1768 Wilkes was expelled the House of Parliament and declared to be incapable of serving therein. However, after repeated re-elections, in 1782 this declaration was expunged from the Commons' journals as 'subversive of the rights of the whole body of electors.'

The right of constituencies to elect whom they will was thereby established.

(*b*) In 1763 he was arrested under a *General Warrant*, but was brought before Chief Justice Pratt by writ of Habeas Corpus.

On the ground that his privilege of Member of Parliament had been violated he was discharged.

(*c*) *The freedom from arrest of Members of Parliament was thereby established*; and at the same time the *illegality of General Warrants was declared.*

9. What native powers were our most formidable enemies in India during the administration of Warren Hastings? Give some account of our conflicts with them.

(9) Our most dangerous foes were (*a*) the Mahrattas, (*b*) the French, (*c*) Hyder Ali and Tippoo Sahib.

(*a*) Under French influence a collision with the Mahrattas was precipitated. These met with important initial successes, and by the capitulation of Wargaum (1779) recovered all the territory lost during the last 20 years. During 1780—81 the contest continued with varying success, but in the latter year Hastings yielded most of the disputed points, and concluded peace and an alliance with them in order to free his troops for the Carnatic war against Hyder Ali.

(*b*) The French opposed the English in India, in connection with the American War of Independence, from 1778 to 1783. Most of the actions at sea were indecisive, but on land the English were almost universally successful, capturing Chundernagore and Pondicherry itself in 1778.

(*c*) Taking advantage of the Mahratta war, Hyder Ali, in 1780, aided by French officers, and allied with the Rajah of Berar and the Nizam of the Deccan, swept down upon the Carnatic, defeating and slaying 3,000 English troops at Perambaucum, and capturing Arcot. But in 1782 Sir Eyre Coote defeated Hyder at Porto Novo, Pollilore and Sholingur, driving him back to the hills and saving the Carnatic.

In 1782 the English were surprised and annihilated near Tanjore, but this disaster was outweighed by the victory of Arnee.

The war was concluded by the Treaty of Mangalore, 1785, the main provision being that all conquests should be mutually restored.

10. Lord Chatham said in 1778, 'Seventeen years ago this people was the terror of the world.' Compare the position of England at the time referred to with that at the time when this sentence was uttered.

(10) (*a*) In 1760 and 1761 England was carrying on the Seven Years' War with glorious success. All quarters of the globe witnessed the proud pre-eminence of our arms. In *Africa*, we had reduced the French Settlements of Senegal and Goree; in *America*, Canada, Cape Breton and Prince Edward's Isles and Guadaloupe had been conquered; in *Europe*, we had ravaged S. Malo, destroyed Cherbourg, and won the naval victories of Lagos and Quiberon Bay; in *Hindostan*, the victories of Plassey and Wandewash had secured for us Bengal and the Carnatic, and our discouraged enemies were earnestly making peaceful overtures.

(*b*) In 1778 we were in the midst of almost insuperable difficulties, and were accustomed to disaster. Burgoyne had surrendered to the Americans, Canada was invaded, France had declared war, Spain was notoriously hostile, discontent was rampant at home, and, instead of acquiring new possessions, both Houses of Parliament were discussing the expediency of purchasing an inglorious peace by acknowledging American Independence.

11. What do you know of the exploits of the following admirals:—Rooke, Hawke, Rodney, Howe and Duncan?

(11) (*a*) *Rooke* forced his way into Vigo Harbour, destroyed eight war ships and six galleons, and brought off ten war ships and four galleons (1702), and captured Gibraltar, and won the Battle of Malaga, 1704.

(*b*) *Hawke*, in 1747, captured six French ships off Belleisle, and in 1759 won a decisive victory in Quiberon Bay.

(*c*) *Rodney*, in 1780, won the battle of Cape St. Vincent, in 1781 the battle of Martinique, and in 1782 captured five French ships, with their admiral the Count de Grasse, and sunk another.

(*d*) *Howe* reduced Cherbourg in 1758, defeated the French De Conflans in 1759, relieved Gibraltar in 1782, gained a decisive victory over the French in 1794, and materially assisted in quelling the Portsmouth mutiny in 1797.

(*e*) *Duncan* shared in the honour of Rodney's victory off Cape St. Vincent, and in 1797 captured eight Dutch ships near Camperdown.

12. How was the Coalition Ministry of 1783 formed? Name its most prominent members. What causes led to its fall?

(12) The Coalition Ministry was formed by a union of the Tories, under Lord North, and the Whigs, under Portland and Fox. It took office after the defeat of Shelburne and Pitt, having, by its supporters, passed a vote of censure upon the Government for the terms of the Peace of Versailles.

In it the Duke of Portland was First Lord of the Treasury,
Lord North ,, Home Secretary,
C. J. Fox ,, Foreign Secretary, and
E. Burke ,, Paymaster.

The real cause of its fall was the king's dislike to Fox. Accordingly, on the defeat of Fox's India Bill, he ordered North and Fox to resign, after being in office not quite nine months.

13. Mention one Inventor, one Explorer, one Philanthropist, and one Man of Letters who lived in the 18th century, and give a short account of each.

(13) (*a*) *James Watt* was born at Greenock in 1736, and was there educated. In 1757 he was appointed mathematical instrument maker to Glasgow University, and from this time until 1774 worked as a civil engineer. In 1765 he began to improve the steam engine, and in 1774 went to live at Soho, near Birmingham, having entered into partnership with Mr. Boulton,

a great Birmingham manufacturer. In 1800 he retired from business, having previously been made a Fellow of the Royal Society, and died at Heathfield, in Staffordshire, in 1819.

(*b*) *Captain Cook* was born in 1728 at Marton, in Yorkshire, and, after a meagre education, entered the Royal Navy in 1755. From 1759 to 1766 he greatly distinguished himself by marine surveying, and from 1768 to 1775 was most successfully engaged in assisting astronomical researches and Antarctic exploration. He was made a Fellow of the Royal Society in 1776. In this year he explored a considerable extent of the western coasts of North America and discovered the Sandwich Isles, where, in 1779, he was killed at Hawaii.

(*c*) *William Wilberforce* was born at Hull in 1759, was educated at St. John's, Cambridge, and was in 1780 elected M.P. for his native town. In 1786, with Clarkson, he initiated his crusade against slavery, and for sixteen years he brought in his annual bill against further importation of negroes inso our colonies. In 1807 it was passed. He retired from Parliament in 1825, and died in 1833, having lived just long enough to see the passing of a measure for the total abolition of slavery in the British Colonies.

(*d*) *Oliver Goldsmith* was born at Pallas, in Ireland, in 1728, and in 1745 entered Trinity College, Dublin, which he left in 1749. After leading a wandering life nearly all over Europe, he commenced his literary career in 1757 by conducting a department of the 'Monthly Review.' In 1761 he was introduced to Dr. Johnson, and in 1764 he published 'The Traveller,' which gained him a great reputation. From this time until his death, 1774, he wrote, in a most pleasing style, dramas, poems, histories, &c., which remain popular until the present day.

14. Give a short account of the rise and progressive influence of the Newspaper Press.

(14) (*a*) The first newspaper was 'The Weekly Newes' (1623), and after the abolition of the Star Chamber shoals of others appeared. In 1679 all unofficial newspapers were stopped and coffee houses supplied their place. The Licensing Act finally expired in 1695, and since then the censorship of the Press has formed no part of English law.

The talents of Addison, Swift, Steele and Bolingbroke greatly extended newspaper influence, which was, however, greatly checked by the different Stamp Acts of Anne's, George III.'s, and later reigns. In 1833 the advertisement duty was greatly lowered, and in 1853 totally abandoned. In 1836 the stamp on newspapers was lowered to 1d., and in 1853 altogether relinquished. Finally, the duty on paper was swept away in 1861.

(*b*) The law of libel was vigorously enforced until the prosecutions of Wilkes (1763), Woodfall (1770), and Stockdale (1789) paved the way for the Fox Libel Act of 1792. The French Revolution, with its licentious literary offspring, greatly retarded the freedom of the press, which was not finally established until 1832, and Lord Campbell's Act of 1843 secured greater immunity to editors, writers and publishers.

15. What important inventions were made in the latter half of the 18th century? Show that during the century the locality of some of the chief seats of manufacturing industry in England was changed.

(15)

Invention.	Author.	Date.
Spinning jenny	Hargreaves ...	1767
,, frame	Arkwright ...	1768
,, mule	Crompton ...	1775
Power loom	Cartwright ...	1785
Improvements of steam engine ...	Watt	1765—1800
Earthenware processes ...	Wedgewood ...	1760—1780
Hydrostatic press ...	Bramah ...	1796
Photography	'Lunar Society'	1770—1790

Iron manufacture was carried on in Sussex and Kent, and charcoal was employed for smelting, but when pit-coal was utilised the industry flitted to the coalfields.

The chief seat of the *woollen manufacture* shifted from Norfolk to Yorkshire.

Female Candidates.

SECOND YEAR.

Domestic Economy.

1. Explain the terms phosphate, cereal, albumen, leguminous, fibrin, and casein, and give examples of their use.

(1) *Phosphate*, meaning phosphate of lime, is a chemical mixture of phosphoric acid and lime. The body requires *lime* for the consolidation of the bones, and the production of the shell-like portions of the body. Phosphorus must be united with fatty matter to serve as material for nervous tissue. This phosphate exists very largely in the seeds of most grasses, and especially in wheaten flour. Phosphates are largely used as chemical foods in cases of consumption and decay.

Cereal is the name given to the corn-plants, wheat, rye, barley, oats, rice, &c. They constitute the principal vegetable foods, one of their chief products, wheat, being called 'the staff of life.' Their capability of being grown in almost any climate, has assisted in securing their almost universal consumption.

Albumen is a substance identical with the pure white of eggs. It is also found in all flesh foods, and, in very small proportion, in fish. It is flesh-forming, exists in the brain, and forms about one-fifth of the blood. In a liquid state, albumen is easily digested.

Leguminous seeds (or pulse) are the produce of a tribe of plants, distinguished by their butterfly-shaped flowers and peculiar fruit, called a pod or legume. Peas, beans, haricots and lentils are the leguminous seeds used in this country. They are used as vegetables, and are the most nutritious and flesh-forming of all vegetable substances.

Fibrin is the fibre of the flesh of animals, supplies flesh-forming materials to the body; contained in meat and the gluten of wheat.

Casein is the solid part or curd of milk, and constitutes the chief part of cheese. Legumin is of the same character. Casein is a nutritious and strength-giving food.

2. How are coffee, milk, bread, beer and butter sometimes adulterated, and by what means can such adulteration be most readily detected?

(2) Ground *Coffee* is often adulterated with chicory, roasted beans, peas and acorns, but chiefly by the first. Chicory in small quantities is harmless, and a palatable addition, but should be bought alone. The smell, taste and dark colour of the coffee and infusion will betray any of these adulterations.

Milk is often largely mixed with water to increase the quantity. If alone, water may be detected by the blue tinge and thinness of the milk. Sometimes, however, chalk or similar powder is used to whiten it. Absence of cream after the milk has been standing shows it to have been tampered with. *Milk testers* may now be obtained to ensure its purity.

Bread and Flour are adulterated with corn flour, potato flour, peas and beans, bone-dust, plaster of Paris, chalk, alum, &c. Alum is the most used.

Put a hot knife into a loaf that is a day old, and if alum be present small pieces of it will adhere to the knife, and will also be observed by the peculiar smell. Bread is unusually white, gives off a lot of water, and becomes dry and brittle when toasted, if mixed with alum. To detect peas or beans, pour boiling water on a portion of the bread, and the adulteration will be smelt. Slice the soft parts of a loaf into water, place over a fire for two or three hours, allow to settle, pour off water, and chalk or plaster of Paris, if there be any, will fall to the bottom.

Beer is adulterated with tobacco, capsicum, ginger, quassia, wormwood, caraway and coriander seeds, honey, cream of tartar, alum, and many other things, used for finings, colourings, bitters, and for the purpose of giving it a 'head.' Such beer rapidly intoxicates, and is quickly 'heady.' Any *seeds* used will leave traces of themselves.

Butter is made heavy by water and inferior fat, disguised by colouring matter. This refers chiefly to foreign butter. The water will generally exude from the butter, and taste will discover the other substances.

N.B.—Margarine and butterines are not adulterations, but imitations of butter.

3. What causes the prices of meat, fish and vegetables to vary at different periods of the year? Give some instances showing at what times it is advantageous, and when it is disadvantageous, to purchase particular articles.

(3) The prices of meat, fish and vegetables are determined by the same general principles as those of other commodities, namely, chiefly by the supply and demand. It only remains, therefore, to account for the fluctuation of the two last.

Meat is dearest in hot weather, when pasture for the living animal is most plentiful, and flesh is least required for food. It is cheapest at the commencement of winter, and especially after a poor hay season, for then many beasts are killed to avoid the expense of winter keep. The large imports of carcases and live stock have much steadied prices.

Fish varies most in price on account of its early decay, and the irregularity in its supply through the variable 'catches.' To some extent the price is also influenced by 'fasts and fashions' creating a demand.

Vegetables are, of course, dearest in winter, and cheapest just after the crop has reached maturity. Any failure of crop increases the prices.

Beef should generally be purchased in cold weather, when it will keep better, is more necessary for the system, and the supply is largest.

Herrings may with advantage be bought and cured at the end of June, the fish at that time being most abundant, and of full size and roe.

Potatoes for winter and spring use should be secured and stored from October to November, at which time they are generally reasonable in price and soundest.

Eggs should be bought for preserving, in the months of July and August, and in large quantities, as they are so useful an article of cookery.

4. Give a recipe for making barley-water, and say when and in what sort of illnesses it is most useful.

(4) *Ingredients:* One ounce of pearl barley, one quart water, sweetening and flavouring. Wash the barley, pour over a small quantity of boiling water, boil for a few minutes and then throw away this first water. Add to the barley a quart of boiling water and boil until the liquor is reduced to one pint. Strain, sweeten the liquor with sugar, and add lemon-juice, or any other flavouring preferable and suitable to the patient.

Barley-water is a cooling and refreshing beverage. It is especially useful in cases of fever and all febrile diseases. It is beneficial during the feverishness, cooling the body and quenching thirst; and, when the patient is recovering, it furnishes slight nourishment in addition.

5. Describe the equipment of a kitchen suited for the teaching of cookery in a country school; and give in detail an estimate of the cost of fitting it.

(5) *Kitchen:* A class-room would, no doubt, be set apart and reserved purposely for the cooking kitchen. A raised gallery is best for demonstration lessons. Gas may not be obtainable in the country, therefore gas-stoves will not be used. A good convenient range is most suitable, as being more likely to be used by the children in after life. On the walls should be shelves for saucepans, &c., and a cupboard should be fixed for crockery.

The grate will cost from £6 upwards; cupboard, £1 10s.; shelves, 10s.; long table on tressels, £1.

Utensils, Hardware, Earthenware, &c.

The following list provides for demonstration lessons and practice for 24 girls. It is, of course, better for only 12 girls, where practicable; and is suitable where 'artisan cookery' only is taught:—

	£	s.	d.
1 water kettle	0	2	6
1 fish kettle	0	3	6
6 iron saucepans (diff. sizes) ...	0	8	0
2 frying pans, 10d. and 1s. 6d. ...	0	2	4
2 stew pans	0	4	0
1 fish slice	0	0	6
1 flour dredger	0	0	6
3 rolling pins	0	1	6
3 paste boards	0	4	6
1 nutmeg grater	0	0	3
1 colander	0	0	8
1 strainer	0	0	10
2 baking sheets	0	0	6
2 baking tins	0	1	0
6 wooden spoons	0	1	0
6 iron spoons	0	1	0
3 tea spoons	0	0	9
1 soup ladle	0	1	3
2 pie dishes	0	1	4
6 plates	0	1	4
2 soup plates	0	1	0
6 basins	0	1	6
2 smaller basins	0	0	4
1 tea cup	0	0	1
1 blacklead brush	0	0	10
1 scrubbing brush	0	0	8
1 knife box	0	2	0
1 bucket	0	1	3
Set of skewers (1 doz.)	0	0	6
1 water-jug (tin)	0	1	0
6 towels	0	2	0
4 dusters	0	0	8
3 pudding cloths	0	0	3
6 knives and forks	0	6	0
1 potato knife	0	0	6
1 large-pointed knife	0	2	6
1 small-pointed knife	0	2	0
1 salt box	0	0	6
2 dish cloths	0	0	2
1 flour box	0	2	0
1 rubbish box, or basket	0	0	6
Small scale and weights	0	10	6
Digester, or stock pot	0	6	0
Total ...	£4	0	0

Total amount:—

	£	s.	d.
Range (say)	7	0	0
Cup board	1	10	0
Table and tressels	1	0	0
Shelves	0	10	0
Utensils	4	0	0
Total ...	£14	0	0

Note.—The prices of the utensils named are such as the girls themselves might expect to give were they purchasing them separately. In the case of the kitchen being completely furnished at once, an order would be given to a firm habitually supplying such outfits, and ordinary discount secured.

6. Say what you would do in the case of a child who had (1) fallen into the fire-place and been burned; or (2) been scalded; or (3) received a deep cut with a knife?

(6) 1. The clothes of the burned child should be quickly removed and injuries ascertained. The most available remedy in cases of burns and scalds is flour, and where the burns are only superficial, nothing further will be required. Sprinkle thickly, and cover up with rag or cotton wool. The latter, without the flour, is also good. Linseed oil, olive oil, and carron oil (linseed oil and lime water) are all excellent remedies. The bandages should not be disturbed for two days, then a little oil or lard ointment will no doubt be sufficient to effect a cure. In cases of large burns, the more oil used the better; this may prevent much disfigurement by keeping the skin from shrivelling.

2. Scalds are treated in the same way as burns, if on the outer part of the body. Blisters should not be pricked for a day or two. Stockings and shoes (if the legs be scalded) should not be dragged off unmercifully, but cut up carefully so as to irritate wound as little as possible. The worst kind of scald is an internal one, that caused by drinking from spouts of kettles and tea pots being most common. These are cases where a medical man must be called at once. Little can be done beyond administering a little goose or salad oil.

3. If the cut be on a large surface, draw the edges together and press several strips of sticking plaster across the cut diagonally and crossing each other. If on any limb, take strips of rag and bind up the cut in the blood. When the bleeding is stopped apply sticking plaster.

Should the bleeding point to the cutting of a vein or artery, tie a piece of tape or other bandage tightly round the limb above the cut, and send for medical man who may require to resort to stitching.

7. What are the advantages or disadvantages of clothing clubs, shoe clubs, or other similar contrivances for saving in a school, and how do they compare in usefulness with the ordinary Post Office Savings Bank?

(7) Clothing and shoe clubs are advantageous, inasmuch as they—

(*a*) Furnish a specific object to save for.

(*b*) Require regular payments, which are often brought with the school fee.

(*c*) Arouse the personal interest of the child.

(*d*) Link the scholar more firmly to his school, and

(*e*) Excite sympathetic assistance from managers and friends.

They are, however, open to objection because—

(*a*) Their sphere is limited to scholars.

(*b*) Their funds are more liable to manipulation.

(*c*) They may be abused by well-to-do parents.

(*d*) They are occasionally somewhat pauperising, and

(*e*) The money is not available in any emergency.

The Post Office Savings Bank is, for really frugal and strong-minded people, often the best, for it—

(*a*) Assists self-help, and, in comparison, promotes a manly feeling of independence.

(*b*) Demands no initial expenses (as of cards) whatever.

(*c*) Allows deposits and withdrawals at almost any time.

(*d*) Is open, by means of stamps, to deposits as low as a penny.

(*e*) Will permit a larger total to accumulate, without compelling an annual withdrawal, and

(*f*) Promotes national and social feeling.

8. Give a list of articles needed in order to keep a dwelling-house clean, and state the price of each of them.

(8) 1. *Sweeping.*—Long hair broom, 2s. ; long hard broom, 1s. 4d. ; carpet brush, 2s. 6d. ; hand brush, 8d. ; dust pan, 1s. 3d. ; tea-leaves.

2. *Scouring.*—Scrubbing brush, 1s. 4d. ; 2 buckets, 2s. 6d. ; small cocoa fibre brush, 3d. ; soft soap, 3d. per lb. ; yellow soap, 3d. per lb. ; soda, ½d. per lb. ; soap-powder, for paint, 3d. per lb ; scouring flannel, which may be made from old stockings, or old pieces of flannel sewn together.

3. *Dusting.*—2 dust covers, made from old counterpanes, sheets, or any odd pieces of material. Plenty of dusters, strong for the heavier and soft for the lighter furniture. Old silk handkerchiefs for mirrors and delicate surfaces. Small dusting brush, 8d. Feather wing or brush, 1s. 3d. Furniture polish, and ammonia for removing spots.

4. *Window-cleaning, grate-polishing, and general brightening.*—2 wash leathers, 2s. ; plate powder, 1s. per box ; whiting, ½d. per lb. ; brick dust, 1½d. each ; oil, 3d. per pint ; turpentine, 6d. per pint ; riddle for cinders, 2s. 6d. ; 3 black lead brushes, 2s. 6d. ; 3 shoe brushes, 2s. 6d. ; blacklead, 3½d. ; blacking 3d. per dozen packets ; knife-board, 8d.

Walls may be cleaned with dusters and bread.

9. What are the tests by which you would judge of the goodness of eggs, of bacon, and of fish? Say what are the special advantages, if any, of occasional fish diet, and what kinds of fish are most wholesome and economical.

(9) (*a*) *Eggs* if fresh, when held between the eye and the light, will appear perfectly clear and light in colour. The large end of a fresh egg, when held to the tongue, is quite warm. A bad egg will sink if placed in water.

Bacon when cut should have the fat white and firm and the lean a bright fresh red colour ; if dark and greasy looking, the bacon will probably be rusty. If the flitch is not cut, a knife plunged in will betray any rust by the smell.

Fish.—Freshness is not the only test of the goodness of fish. Plenty of scales, firmness of flesh, redness of gills (in some cases) are all tests of freshness. If *not in season* the scales will have a bluish tint. Special tests, also, may be applied to particular kinds of fish.

(*b*) An occasional fish diet is advantageous :—

1. Because it affords a variety ; the body not always requiring strong meat.

2. On account of its cheapness, especially as the cheaper kinds of fish, as a rule, are found to contain the most nourishment.

3. In cases where a 'light diet' is necessary, as in illness, or obesity.

4. For persons who require to study, as it contains a considerable amount of brain food.

The most wholesome and economical kinds of fish are—cod, whiting, plaice, haddock, herrings, turbot, Dutch soles and mackerel.

10. What are 'Consols,' and what interest is paid upon them? What is the lowest sum which may be invested in this way, and what are the advantages of this form of investment ;

(10) '*Consols*' is a public stock forming the greater part of the National Debt. It was formed in 1751 by *consolidating* several separate stocks, bearing interest at 3 per cent. By Mr. Goschen's Act they now pay 2½ per cent., or 2¾ per cent., and the *lowest amount* that can be invested is *one shilling*, through the medium of the Post Office. The main advantages of this form of investment are—

1. Absolute security.
2. Freedom from initial or current expenses.
3. Facility of purchase or sale.
4. Regular payment of interest, and
5. The strengthening of national and social stability.

11. 'Those that with haste will make a mighty fire,
Begin it with weak straws.'

Is this the best way to make a fire? Give some rules, suited for a class of elder girls, as to making a fire ; and also as to the best way of economising fuel in those times of the day when the fire is least needed.

(11) 'The weak straws,' as applied to fire lighting, suggest the paper, shavings, wood, and finally the hard coal, which must be built up in this order, to secure a successfully lighted fire.

Method of lighting a fire. Clean out all ashes and flue dust. Put a few cinders and coals at bottom of grate. Lay on several pieces of paper lightly crumpled, sticks which must be well dried, a few cinders, and finally small pieces of coal. Everything should be arranged so that a free *draught of air* be secured. Apply a light to the paper, and see that all is safely starting to blaze before leaving it. If the chimney does not draw well, place a lighted paper in it for a few minutes to warm the air and make a draught.

2nd Method. Cover bottom of grate closely with iron plate. Put in coals, a few cinders, wood, paper or shavings, and then a few cinders just to start the fire. Light at the top. This fire will burn gradually downwards, and warm the room, without burning away quickly, but will not do for cooking purposes.

For economising fuel when fire is not required, put on a large lump, pack round with slack damped a little. When the fire is again wanted, most of the lump may be broken up and a cheerful fire made.

Coal savers are very economical, as the bottom part is a reflector sending out the heat, while only a little fire is required to fill remainder of grate.

12. What is meant by 'Stock' for cooking purposes? Say how you would use and economise it ; and give recipes for two cheap nourishing soups.

(12) (*a*) '*Stock*' is the liquor in which meat has been boiled.

(*b*) For gravies, and for the foundation of soups. To ensure the greatest amount of stock from a piece of meat, a digester should be used, as very little steam can escape from this pot, and consequently very little waste take place. When the meat is cooked, put stock away in earthenware jar. To keep fresh it must be boiled up and put in clean vessel each day. Bones from cold meat, lean scraps, and fresh bones chopped and if possible ground, should all find their way to the stock pot. A little salt and pepper will keep the liquor sweet, and soups can be made by adding whatever is preferred in the way of vegetables or other flavourings, taking out each day just the amount required.

1. Potato or Turnip soup.—Boil in stock any potatoes or turnips that have been left, and an onion, for about half-an-hour. Pass all through a colander. Thicken with baked flour. Give one boil, and serve.

2. Lentil soup, with or without meat.—Half-a-pint of lentils, two carrots, one small turnip, one onion, a head of celery, seasoning.

Boil lentils (4 to 6 hours) on the day before soup is required. The other vegetables should be sliced small and added next day ; boil for an hour, pass all through a colander. This soup can be made with stock, or bones or shin beef can be boiled with the lentils.

Science Notes.

THE British Association for the advancement of Science appointed a committee some time ago to make enquiries, and then report, upon the teaching of chemistry in schools. Circulars were sent out to the chief educational establishments in the country, and answers to certain questions were asked for. It was further requested that the writers should state their opinions freely as to the end that should be kept in view, and also the best means to be adopted for attaining it. After careful consideration, the committee have not only made a report, but they have adopted a scheme. In all probability it will soon be printed and circulated in the form of a pamphlet. Meantime it can be seen in the issue of *Nature* for October the 17th. It is worthy of very attentive study, whatever may be the extent to which it may be subsequently adopted. It is undoubtedly the most important educational step taken by the British Association.

The general scope of the scheme is thus explained in an article by one of the members of the committee. 'The course is divided into six stages. Stage I. deals with lessons on common and familiar things; the classification of these according to their uses and origin; elementary physiography and Naturkunde. Stage II. deals with lessons in measurement.

'Stage III. begins with the study of heat on things in general, and of their behaviour when burnt. Stage IV. is called the problem stage. The object here is to determine what happens when iron rusts; to determine the nature of the changes which take place when substances are burnt in air; to separate the active rom the inactive constituents of air; to determine the composition ot chalk; to determine what happens when organic substances are burnt; to determine what happens when sulphur is burnt; to determine what happens when metals are heated with acids; to determine what happens when oxides are heated with acids; to determine what happens when the gas obtained by dissolving iron in sulphuric acid is burnt; to determine what happens when hydrogen and other combustible bodies are heated with oxides; to determine whether oxides, such as water and chalk gas, may be deprived of oxygen by means of metals; to determine the composition of salt gas, and the manner in which it acts on metals and oxides; to determine the composition of washing soda. The next stage is the quantitative stage, the study of the quantitative composition of some of those bodies which have already been qualitatively examined. Stage VI. treats of the physical properties of gases in comparison of those of liquids and solids, the molecular and atomic theories, and their application.' This is an epitome of the new syllabus of science-teaching in schools which the committee recommends. They also insist that this instruction should be begun early, and that all the children should receive it.

A book that is worth reading about is worth reading. Teachers will do better to read this scheme than to read other people's opinions of it. We will only say that most teachers who have ever given instruction in physical science in the only way in which it is of the slightest use—by direct reference to things treated of—will acknowledge that the scheme has the right ring about it; it is an attempt to study things rather than books. The idea that a boy can learn chemistry by reading a book, especially if it is explained by diagrams and oral instruction, is still entertained, especially in higher schools. My colleague's boy has just entered a large public school in London, which is presided over by one of the ablest schoolmasters in England. The boy had his first lesson on hydrogen last week, which was given without a single experiment. Such teaching is hardly possible now in the best elementary schools.

The great merit of the new scheme is not that it goes back from books to things; there is nothing new in that. The distinguishing feature of the new departure is the breadth of it. Physical science, even in its elements, is recognised as being concerned with many things. No hard and fast lines can be drawn between one part of it and another. The question is being constantly asked, What shall we teach?—What is most useful in the matter of Physical Science, Chemistry, Botany, Geology, or Physiology? The answer seems often to be, that the one involves the other, and can only be understood in connection with it. It is a mistake to regard these subjects as entirely distinct. Our modern examination requirements encourage this view.

What success will attend the new course which has been suggested is not easy to say. Examining boards move slowly. Meantime it cannot be too plainly understood that no scheme stands the slightest chance of being largely adopted in schools unless the examining bodies do move. Teachers are expected to enable their pupils to satisfy the examiners. Unless they do this they will be discredited, and in many cases dismissed. It is idle for them to say they know better than their masters. But while the teachers have little discretion the examiners have much. Let them ask questions which will justify teachers in making a change in their methods and subjects of instruction, and they will be eager enough to make a change.

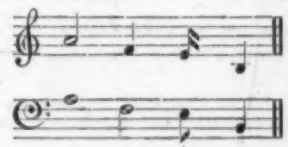
Model Answers to Pupil Teacher Examination Papers.

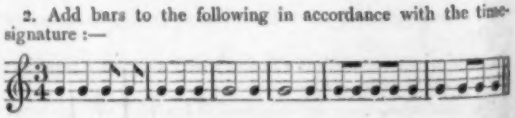
19TH OCTOBER, 1889.

END OF FIRST YEAR.

Music.

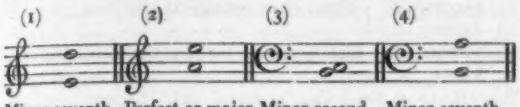
STAFF NOTATION.

1. Write the following an octave lower on the Bass clef, doubling the value of every note:

2. Add bars to the following in accordance with the time-signature:—



3. Write below each of the following intervals its name (major second, &c.):—

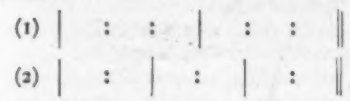
(1) (2) (3) (4)



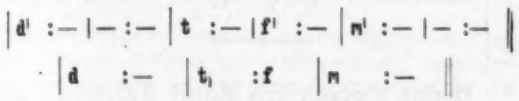
Minor seventh. Perfect or major fifth. Minor second. Minor seventh.

TONIC SOL-FA NOTATION.

1. Write (1) two three-pulse measures, and (2) three two-pulse measures.



2. Write the following an octave lower, halving the value of each note:—



3. Write the names of the following intervals:—

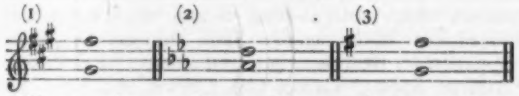
(1) *me* to *ray*¹. Minor seventh.
(2) *lah* to *me*¹. Perfect or major fifth.
(3) *te*₁ to *doh*. Minor second.
(4) *te*₁ to *lah*. Minor seventh.

END OF SECOND YEAR.

STAFF NOTATION.

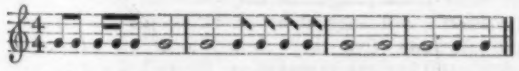
1. Write below each of the following intervals its name (major third, &c.):—

(1) (2) (3)



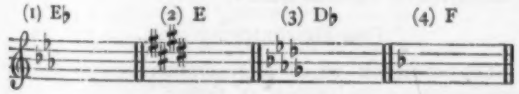
Minor seventh. Augmented or pluperfect fourth, or tritone. Major seventh.

2. Add bars to the following in accordance with the time-signature:—



3. Write the signatures of the following major keys (treble clef):—

(1) E♭ (2) E (3) D♭ (4) F

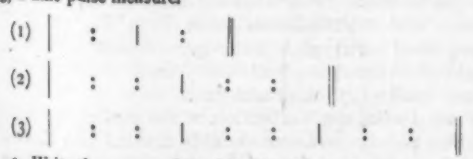


TONIC SOL-FA NOTATION.

1. What is the mental effect (1) of *lah*, (2) of *fah*, (3) of *doh*?

(1) Sad. (2) Awe inspiring. (3) Firm rest.

2. Write (1) a four-pulse measure, (2) a six-pulse measure, (3) a nine-pulse measure.



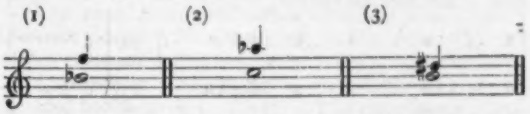
3. Write the names of the following intervals:—

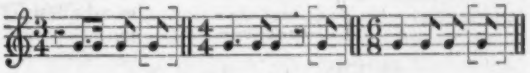
(1) *fah* to *me*¹. Major seventh.
(2) *fah* to *te*. Augmented or pluperfect fourth, or tritone.
(3) *doh* to *te* (up). Major seventh.
(4) *me* to *soh*. Minor third.

END OF THIRD YEAR.

STAFF NOTATION.

1. Write above (1) a perfect or major fifth, above (2) a minor sixth, above (3) a major third.

(1) (2) (3)

2. Complete each of the following bars by adding one note at the end:—



3. State (briefly) the meanings of the following terms:—

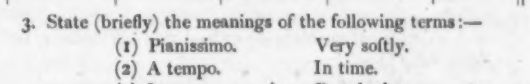
(1) Pianissimo. Very softly.
(2) A tempo. In time.
(3) Largo. Broad, slow.
(4) Staccato. Cut short

TONIC SOL-FA NOTATION.

1. Write a major third above each of the following notes:—

(1) Above *ray* = *fe*.
(2) Above *fah* = *lah*.
(3) Above *te*₁ = *re*.

2. Write (in figures) over each note and rest in the following passage its value in pulses or fractions of a pulse:—



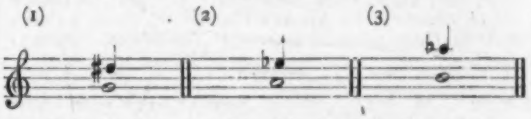
3. State (briefly) the meanings of the following terms:—

(1) Pianissimo. Very softly.
(2) A tempo. In time.
(3) Largo. Broad, slow.
(4) Staccato. Cut short.

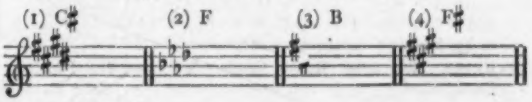
END OF FOURTH YEAR.

STAFF NOTATION.

1. Write above (1) an augmented fifth, above (2) a minor or diminished fifth, and above (3) a diminished seventh:—

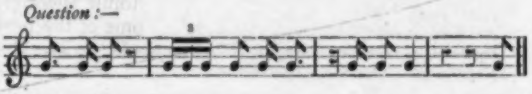
(1) (2) (3)

2. Write the signatures of the following *minor* keys:—

(1) C♯ (2) F (3) B (4) F♯

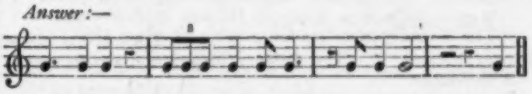


3. Re-write the following, doubling the value of every note and rest:—

Question:—



Answer:—



TONIC SOL-FA NOTATION.

1. Which is the highest, *te*₁ in Key B♭, *fah* in Key D, or *me* in Key C?

The *te*₁ in Key B♭.

2. In the minor mode (1) which note is the tonic, (2) which is the sub-dominant, (3) and which is the major or essential seventh?

(1) *lah.* (2) *ray.* (3) *se.*

3. Re-write the following in four-pulse measure, doubling the value of each note and rest :—

| s .,l :s .	.t :d'.s.m	| f .t_1 :d	‖
| s :-.l | s :	:t | d'.s :m	| f :t_1 | d :—	‖

(The completion of Questions and Model Answers will appear in our next issue.)

—o—

Publications Received.

PRIZE BOOKS.

BLACKIE AND SON.—Tales of Daring and Danger (*G. A. Henty*); Thorndyke Manor (*Mary C. Rowsell*); The Loss of John Humble (*G. Norway*); A Warrior King (*J. Evelyn*); Miriam's Ambition (*E. Everett Green*); With Lee in Virginia (*G. A. Henty*); Max or Baby (*Imay Thorne*); Lady Daisy (*C. Stewart*); A Little Man of War (*Tiddeman*); The Golden Plums (*F. Clare*); A Day of Adventures (*C. Wyatt*); Jack-a-Dandy (*E. G. Lysaght*); The Lost Thimble (*Musgrave*); Things will take a Turn (*B. Harraden*); An Emigrant Boy's Story (*Ascott R. Hope*); The Castle on the Shore (*J. Hornibrook*); A Gypsy against Her Will (*E. Leslie*); Mr. Lipscombe's Apples (*J. Goddard*); Gladys, or the Sister's Charge (*E. O'Byrne*); Jock and his Friend (*Cora Langton*); John O'Dale (*Mary C. Rowsell*); Grettir, the Outlaw (*S. Baring Gould*).

FISHER UNWIN, T.—Early Britain (*Prof. A. J. Church*) (Vol. 21, Story of the Nations); Good Men and True (*A. H. Japp, LL.D.*).

HODDER AND STOUGHTON.—Roger Willoughby (*Kingston*).

NATIONAL SOCIETY, THE.—Chris. Derrick; Maud Florence Nellie (*C. E. Coleridge*); The Cunning Woman's Grandson (*Charlotte M. Yonge*); Banning and Blessing; A Pair of Cousins (*Bramston*); Fairmeadows Farm (*M. H. Debenham*); Cast Ashore (*Esmé Stuart*); The Blue Dragon (*Frances M. Peard*); In Charge (*Mary E. Palgrave*).

NELSON, T., AND SONS.—Master Travers (*Florence M. Story*); Timothy Tatters (*T. M. Caldwell*); The Favourite Book of Fables; Tuke (*Isabel Hornibrook*); Jack and his Ostrich (*E. Stredder*); Sir Aylmer's Heir (*E. E. Green*); Dora's Dolls' House (*Hon. Mrs. Green*); The Children's Treasury.

BACON, G. W., & CO.—Bacon's Excelsior Combination Atlas for Pupil Teachers.

BLACKIE AND SON.—Ablett's Drawing Copies, Standards V. and VI.; Vere Foster's Bold Writing Copybooks, Nos. 9 to 15, and 18; Elementary Mechanics, Part I.

CHAMBERS, W. AND R.—Chambers's Expressive Reader, Book IV.

CHAPMAN AND HALL.—Introductory Lessons on Quantitative Analysis (*J. Mills and Barker North*); Elements of Physiology (*Brock*); Lessons in Elementary Physiographic Astronomy (*Mills*); Solutions to Questions (Science and Art Department)—Building Construction; Hygiene; Principles of Agriculture; Magnetism and Electricity; Animal Physiology; Machine Construction.

DAWSON, A. E.—Pleasant Stories for Composition (*Wood*); Mental Arithmetic, Standards III. and IV. (*Macnamara*); The Townley Standard Geography, Standard III.

FISHER UNWIN, T.—The Century Magazine. October and November.

GILL, G., AND SONS.—Charades and Plays (*Grace Toplis*).

HEYWOOD, JOHN,—How to Prepare for Matriculation at the London University (*Tudor Rogers*); Action Songs (*J. Cliffe Wade*); Science Manuals—Sound, Light and Heat (*Gardiner*).

LAURIE, T.—Domestic Economy in Public Education.

LONGMANS & CO.—Handbook of English Literature, Part 3 (*McWilliam*); Elementary Science Manuals—Steam (*W. Ripper*).

MACLEHOSE, R.—Bible Questions for Mrs. Cuthbert's Sabbath Class.

MACMILLAN & CO.—Virgil's Æneid VII. (*Calvert*); Shakespeare's 'Tempest' (*Deighton*); Milton's 'L'Allegro' and 'Il Penseroso' (*Bell*); Westward Ho! (*Charles Kingsley*).

RUDDIMAN, JOHNSTON & CO.—Modern Atlas of the World.

SMITH, ELDER & CO.—The Cornhill Magazine. October.

SONNENSCHEIN & CO.—First German Reader and Writer (Parallel Grammar Series).

THE CLARENDON PRESS.—Campbell—Gertrude of Wyoming (Notes by *H. Macaulay Fitzgibbon, M.A.*).

TRÜBNER & CO.—Shakespeare's 'Cymbeline,' with Notes (*Ingleby*).

WHITTAKER & CO.—A Complete German Grammar—Advanced Course (*Dr. Frans Lange*).

—o—

Model Essays for Pupil Teachers.

BY C. J. DAWSON, B.A.,

Ex-President of the N.U.E.T.

XIII.

THE practice of writing essays has one advantage over some other forms of preparation for examination—the endless variety of the subjects which may form exercises for practice, admits of the occasional selection of those matters which most interest us and which constitute indeed our amusements. Such subjects are often appointed for treatment in examinations; for example, 'Athletic Sports,' Games like Cricket and Football, Music and Art. In a recent examination an exercise was given which would no doubt prove attractive to many of the candidates, and as it affords a suitable example of the kind we have referred to, we propose to make it the subject of our specimen essay on this occasion. We suggest as an additional exercise for our students, that they should form an outline or abstract of the essay, and then, as we have previously suggested, after the lapse of a short time write one themselves on a similar plan.

THE HISTORICAL NOVEL.

The objection which a generation ago so many people felt to the reading of fiction has almost disappeared, or at least has become modified into the well-based opinions that fiction should be carefully chosen, and should form only a part of our reading. The greater favour shown to fictitious literature, has probably been one cause, amongst others, for the great increase in its production during the past thirty or forty years. The multitudinous issue from the press of novels of all sorts makes it the more desirable that we should endeavour to select wisely those most suitable for our intellectual entertainment.

If we devote some attention to the matter, we shall find that novels can be reasonably divided into classes according to the subjects they deal with. Thus there are fashionable or society novels, romances or fanciful stories, novels of adventure, novels of life and character, and historical novels. The society novels are perhaps the most numerous, and as a rule the least satisfying.

Romances and novels of adventure generally claim attention from the wonders in which they abound, and so serve well the purpose of amusing. Novels of life and character interest us by setting in clear light the development of character under the progress of events. Historical novels, being based upon the facts of history, are more likely to instruct than any other class. But it must be distinctly recognised that it is only the best novels of each kind that will generally repay perusal even as a satisfactory pastime.

Historical novels are of different kinds: Some are romances, that is, stories which, while they deal with certain actual events, and characters which have really existed, contain elements of great improbability due to the imagination and invention of the author. In other historical tales there may be no violation of ordinary probabilities, though the whole of the plot and succession of events may be fictitious.

The reading of historical novels may prove very useful in our studies of history if we will only remember that we must not regard them as authorities for the facts of history. Sometimes objections have been raised to these novels on the ground that they deviate from historical accuracy, that they represent events in undue proportion, that they mingle fiction with fact in an inextricable manner. Still no one need be misled by these characteristics of the historical novel or romance if the above caution be duly borne in mind, namely, that on matters of actual fact we must look to other authorities.

How then, it may be asked, can historical novels afford us any instruction in history? The answer is, by producing in a lifelike manner the conditions of the time with which they deal. No novelist would think of writing an historical novel without first studying carefully the period of his story, and the general state of the various classes from which his characters were supposed to be drawn. The historian who undertakes to narrate the events of the past, has to do this possibly with more care and thoroughness; but the advantage of the novelist is that his imagination is freer to fill up gaps in existing information, and to depict scenes, incidents, and characters with vivid touches in accordance with what imagination and reason may combine to regard as probable, though without the certainty of authoritative records.

Lord Macaulay, in his essay on Hallam, says 'To make the past present, to bring the distant near, to place us in the society of a great man or on the eminence which overlooks the field of a mighty battle, to invest with the reality of flesh and blood beings whom we are too much inclined to consider as personified qualities in an allegory, to call up our ancestors before us with all their peculiarities of language, manners, and garb, to show us over their houses, to seat us at their tables, to rummage their old-fashioned wardrobes, to explain the uses of their ponderous furniture, these parts of the duty which properly belongs to the historian, have been appropriated by the historical novelist.' The work left to the historian—that of guiding 'our judgment of events and men,' 'tracing the connection of causes and effects,' and 'drawing from the occurrences of former times the general lessons of moral and political wisdom,' he compared to the making of a map, while the work of the historical novelist is like the creation of a painted landscape.

The historical novel is a product of the present century. The founder and the master of the art so well described in our quotation from Macaulay is undoubtedly Sir Walter Scott. Before the marvellous *Waverley* series began, no historical tale of any note had appeared in English, unless we except Miss Porter's *Scottish Chiefs*. Mr. Stopford Brooke says, 'In the vivid portraiture and dramatic reality of such tales as *Old Mortality* and *Quentin Durward*, he (Scott) created the Historical Novel.' The great merit of his works is that in them the past is not merely described, it lives again for the reader embodied in concrete form. The Waverley novels were produced with astonishing rapidity, and the later ones under the pressure of almost overwhelming misfortune; but his early studies had thoroughly steeped the author's mind in the life of days gone by, and his works are remarkable accordingly for their general truth to the character of the times and events they set before us. While English Literature lives and flourishes, such romances as *Ivanhoe* and *The Talisman*, such historical pictures as *Waverley*, *Kenilworth*, and *Woodstock*, will never fail of readers, and these will never fail of their reward in the shape of profit and delight.

Since the days of Sir Walter—the Wizard of the North as he was called—an almost unbroken line of eminent novelists has continued to pour forth works of fancy and imagination for the pleasure of the reading public, and nearly all the best have tried their hands at the historical novel. Some like James and Harrison Ainsworth have almost confined themselves to historical romance, and have written many such works; but they have fallen far short of their great master.

Lord Lytton in his *Last Days of Pompeii* struck a new vein of historical romance dealing with the life of classical times. He also gave us attractive and interesting novels in *Rienzi*, *Harold*, and *the Last of the Barons*.

Whyte Melville followed with his *Gladiators*, a tale of Rome and Judea, which affords vivid pictures of life in Rome and the siege of Jerusalem. *Holmby House*, by the same author, treats of the Civil War of Charles I.

The Rev. Charles Kingsley in his *Westward Ho* has produced a deservedly popular books, glowing with the spirit that breathed through 'the spacious times of Queen Elizabeth.' In *Hypatia* he graphically depicts the conflict between Paganism and Early Christianity.

It would be tedious to name all the important historical novels given to the world by authors now living or recently dead. One might easily collect a library of such works, and they would serve as valuable illustrations of almost the whole course of our country's annals, and much also of continental and classical history. In such a library besides the works already named, we should have to place Dickens's *Tale of Two Cities*, and *Barnaby Rudge*, Thackeray's *Esmond*, and *The Virginians*, Charles Reade's *The Cloister and the Hearth*, Wilkie Collins' *Antonina*, William Ware's *Fall of Palmyra*, George Eliot's *Romola* and Edna Lyall's *In the Golden Days*.

Let us rightly use such books as these, regarding them as means of throwing light upon our studies in history, and not treating them as substitutes for more sober and substantial works, and we shall find ourselves indebted to the historical novel not only for pleasure and interest, but for real profitable knowledge.

Locke's Thoughts Concerning Education.

BY JOSEPH H. COWHAM, F.G.S.,

Lecturer on School Method: Westminster Training College.

X.

Method of Teaching Geography.

At the same time that he is learning French and Latin, a child, as has been said, may also be entered in arithmetic, geography, chronology, history and geometry too. For if these be taught him in French or Latin, when he begins once to understand either of these tongues, he will get a knowledge in these sciences, and the language to boot.

Geography, I think, should be begun with, for the learning of the figure of the globe, the situation and boundaries of the four parts of the world, and that of particular kingdoms and countries, being only an exercise of the eyes and memory, a child with pleasure will learn and retain them. And this is so certain, that I now live in the house with a child, whom his mother has so well instructed this way in geography, that he knew the limits of the four parts of the world, could readily point, being asked, to any country upon the globe, or any county in the map of England; knew all the great rivers, promontories, straits, and bays in the world, and could find the longitude and latitude of any place, before he was six years old. These things, that he will thus learn by sight, and have by rote in his memory, is not all I confess, that he is to learn upon the globes. But yet it is a good step and preparation to it, and will make the remainder much easier, when his judgment is grown ripe enough for it: besides that, it gets so much time now; and by the pleasure of knowing things, leads him on insensibly to the gaining of languages.

[Geography is placed very early in school work for the reason stated, 'that the study is largely one of memory.' That these early studies, however, should be taken in French and Latin is a violation of a sound rule which Locke himself adopts further on when he says, 'great care must be taken with children to begin with what is plain and simple, and to teach them as little as can be at once, and settle that well in their heads. Another valuable rule which Locke insists on in this chapter runs as follows—'Children may be taught anything that falls under their senses, especially their sight, as far as their memories only are concerned.' This rule would not admit of a course of geography lessons beginning, as Locke suggests, with the figure of the globe, followed by lessons on the continents, and ending with the smaller divisions into countries. The child mentioned might be able, by frequent practice upon a globe, to do all Locke states, and be almost perfectly ignorant of geographical knowledge worthy the name.]

Arithmetic.

When he has the natural parts of the globe well fixed in his memory, it may then be time to begin arithmetic. By the natural parts of the globe, I mean several positions of the parts of the earth and sea, under different names and distinctions of countries, not coming yet to those artificial and imaginary lines, which have been invented, and are only supposed for the better improvement of that science.

Arithmetic is the easiest, and consequently the first sort of abstract reasoning, which the mind commonly bears, or accustoms itself to: and is of so general use in all parts of life and business, that scarce anything is to be done without it. This is certain, a man cannot have too much of it, nor too perfectly: He should therefore begin to be exercised in counting, as soon, and as far, as he is capable of it; and do something in it every day, till he is master of the art of numbers.

[Locke's notion of the value of Arithmetic as a simple and early exercise in reasoning, together with the practical utility of the study and its constant and regular practice in schools, all find acceptance in schools to-day. It is curious to observe the very slight notice given by Locke to this subject, and also the way in which it is associated with the earlier teaching in Geography, and further made an introduction to the study of what is now termed Astronomical Geography.]

Astronomical Geography.

When he understands addition and subtraction, he then may be advanced farther in geography, and after he is acquainted with the poles, zones, parallel, circles, and meridians, be taught longitude and latitude, and by them be made to understand the use of maps, and by the numbers placed on their sides, to know the respective situation of countries, and how to find them out on the terrestrial globe. Which, when he can readily do, he may then be entered in the celestial; and there going over all the circles again, with a more particular observation of the ecliptic or zodiac, to fix them all very clearly, and distinctly in his mind, he may be taught the figure and position of the several constellations, which may be showed him first upon the globe, and then in the heavens.

When that is done, and he knows pretty well the constellations of this our hemisphere, it may be time to give some notions of this our planetary world; and to that purpose, it may not be amiss to make him a draught of the Copernican system, and, therein explain to him the situation of the planets, their respective distances from the sun, the centre of their revolutions. This will prepare him to understand the motion, and theory of the planets, the most easy and natural way. For since astronomers no longer doubt of the motion of the planets about the sun, it is fit he should proceed upon that hypothesis, which is not only the simplest, and least perplexed for a learner, but also the likeliest to be true in itself. But in this, as in all other parts of instruction great care must be taken with children, to begin with that, which is plain and simple, and to teach them as little as can be at once, and settle that well in their heads, before you proceed to the next, or anything new in that science. Give them first one simple idea, and see that they take it right, and perfectly comprehend it before you go any farther, and then add some other simple idea, which lies next in your way to what you aim it; and so proceeding by gentle and insensible steps, children without confusion and amazement, will have their understandings opened, and their thoughts extended farther than could have been expected. And when any one has learned anything himself, there is no such

way to fix it in his memory, and to encourage him to go on, as to set him to teach it others.

[The value of understanding as an aid to memory is here recognised. There is no doubt that we remember best that which we have learned ourselves. Locke's method of teaching Geography, however, appears to omit an important stage, and one which is essential as a basis of sound instruction. He begins with the globe, the distribution of land and water, continents, oceans, rivers, countries, &c., then proceeds to meridian, parallels, latitude, and longitude, and finally from the earth as one of the planetary worlds to a consideration of the entire solar system. Locke omits, however, all reference to the acquisition of the geographical facts which the surroundings of the child present, and whilst he recognises the ease with which anything falling under the senses of children is taught, neglects to place these lessons in any part of his scheme of geographical teaching.]

Geometry.

When he has once got such an acquaintance with the globes, as is above-mentioned, he may be fit to be tried a little in geometry; wherein I think the six first books of Euclid enough for him to be taught. For I am in some doubt, whether more to a man of business, be necessary or useful. At least, if he have a genius and inclination to it, being entered so far by his tutor, he will be able to go on of himself without a teacher.

The globes therefore must be studied, and that diligently; and I think may be begun betimes if the tutor will be but careful to distinguish what the child is capable of knowing and what not; for which this may be a rule that perhaps will go a pretty way, viz. that children may be taught anything, that falls under their senses, especially their sight, as far as their memories only are exercised: and, thus a child very young may learn, which is the equator, which the meridian, etc. which Europe, and which is England, upon the globes, as soon almost as he knows the rooms of the house he lives in, if care be taken not to teach him too much at once, nor to set him upon a new part, till that which he is upon, be perfectly learned and fixed in his memory.

Chronology and History.

With geography, chronology ought to go hand in hand, I mean the general part of it, so that he may have in his mind a view of the whole current of time, and the several considerable epochs that are made use of in history. Without these two history, which is the great mistress of prudence and civil knowledge, and ought to be the proper study of a gentleman, or a man of business in the world; without geography and chronology I say, history will be very ill retained, and very little useful; but be only a jumble of matters of fact confusedly heaped together without order or instruction. 'Tis by these two, that the actions of mankind are ranked into their proper places of time and countries, under which circumstances, they are not only much easier kept in the memory, but in that natural order, are only capable to afford those observations, which make a man the better, and the abler for reading them.

When I speak of chronology as a science, he should be perfect in, I do not mean the little controversies that are in it. These are endless and most of them of so little importance to a gentleman, as not to deserve to be inquired into, were they capable of an easy decision. And therefore all that learned noise, and dust of the chronologist, is wholly to be avoided. The most useful book I have seen in that part of learning, is a small treatise of Strauchius, which is printed in twelves, under the title of Breviarium Chronologicum, out of which, may be selected all that is necessary to be taught a young gentleman concerning chronology; for all that is in that treatise a learner need not be cumbered with. He has in him the most remarkable or useful epochs reduced all to that of the Julian period, which is the easiest, and plainest, and surest method, that can be made use of in chronology. To this treatise of Strauchius, Helvicus's tables may be added, as a book to be turned to on all occasions.

[The association of historical facts with geographical names and places is a very valuable and fruitful exercise. These two branches of school work, when thus combined, become mutually helpful. The storing up of the most important dates in history is essential to the orderly arrangement of events; too many of these dates, however, should not be demanded, otherwise they are in danger of becoming the only acquisition, and a very worthless one it will prove. Locke's notion of the value of history is an exalted one, but not too high. For intellectual training, for moral guidance, for 'prudence and civil knowledge,' *i.e.*, for sound judgment and wise action, especially in public matters, no subject of ordinary school work surpasses it. The use of chronology as a science has ceased in most schools, and very little of educational value is missed on that account.]

As nothing teaches, so nothing delights more than history. The first of these recommends it to the study of grown men, the latter makes me think it is the fittest for a young lad, who as soon as he is instructed in chronology, and acquainted with the several epochs in use, in this part of the world, and can reduce them to the Julian period, should then have some Latin history put into his hand. The choice should be directed by the easiness of the style, for wherever he begins, chronology will keep it from confusion; and the pleasantness of the subject inviting him to read, the language will insensibly be got, without that terrible vexation and uneasiness which children suffer, where they are put into books beyond their capacity; such as are the Roman orators and poets, only to learn the Roman language. When he has by reading mastered the easier, such perhaps as Justin, Eutropius, Quintus Curtius, etc. the next degree to these, will give him no great trouble; and thus by a gradual progress from the plainest and easiest historians, he may at last come to read the most difficult, and sublime of the Latin authors, such as are Tully, Virgil, and Horace.

[It is curious to note how Locke, after denouncing the almost exclusive study of Latin in the schools of his day, at the same time suggests the study of geography, chronology and geometry, not in the pupil's native language, but in Latin. Here again history is first to be learned in Latin, and not that of his own country, but the history of Rome.]

Systems of Ethics—The Bible.

The knowledge of virtue, all along from the beginning, in all the instances he is capable of, being taught him more by practice than rules; and the love of reputation, instead of satisfying his appetite, being made habitual in him, I know not whether he should read any other discourses of morality, but what he finds in the Bible; or have any system of ethics put into his hand, till he can read Tully's Offices, not as a school-boy to learn Latin, but as one that would be informed in the principles, and precepts of virtue, for the conduct of his life.

[Right action stimulated by the example of those surrounding the pupil, and rendered habitual by frequent practice, is enjoined by Locke as being of more worth than the conduct which is regulated by rules dogmatically taught and which is fostered by the mere love of reputation. In school discipline it is necessary to bear in mind that the higher motives to right action can only be appealed to in the later school-days. Cicero's *De Officiis* is a study in moral conduct.]

Civil rule and history.

When he has pretty well digested Tully's Offices, and added to it Puffendorf *de officio hominis et civis*, it may be seasonable to set him upon Grotius *de jure belli et pacis*, or, which perhaps is the better of the two, Puffendorf *de jure naturali et gentium*, wherein he will be instructed in the natural rights of men, and the original and foundations of society, and the duties resulting from thence. This general part of civil law and history, are studies which a gentleman should not barely touch at, but constantly dwell upon, and never have done with. A virtuous and well-behaved young man, that is well versed in the general part of the civil law (which concerns not the chicane of private cases, but the affairs and intercourse of civilized nations in general, grounded upon principles of reason) understands Latin well, and can write a good hand, one may turn loose into the world, with great assurance that he will find employment and esteem everywhere.

[**Samuel Puffendorf,** the son of a Lutheran clergyman was an eminent historical writer. His '*De officio hominis et civis*' is his great work and that upon which his reputation mainly rests. 'The latter work,' says the writer in the *Penny Encyclopædia*, 'is a very careful and accurate digest of the laws of nature, and is arranged on a much more scientific principle than the work of Grotius.'

Grotius was born at Delft in 1583. His works are very numerous. The '*De jure belli et pacis*' is translated into all European languages, and is used in many universities as the text-book for the study of international law.]

Law and Constitutional History.

It would be strange to suppose an English gentleman should be ignorant of the law of his country. This, whatever station he is in, is so requisite that from a justice of the peace, to a minister of state, I know no place he can well fill without it. I do not mean the chicane or wrangling and captious part of the law; a gentleman, whose business is to seek the true measures of right and wrong, and not the arts how to avoid doing the one, and secure himself in doing the other, ought to be as far from such a study of the law, as he is concerned diligently to apply himself to that wherein he may be serviceable to his country. And, to that purpose, I think the right way for a gentleman to study our law, which he does not design for his calling, is to take a view of our English constitution and government, *in the ancient books of the common law*,* and some more modern writers who out of them have given an account of this government. And having got a true idea of that, then to read our history, and with it join in every king's reign, the laws then made; this will give an insight into the reason of our statutes, and show the true ground upon which they came to be made, and what weight they ought to have.

*[In the 'Thoughts concerning Education,' edited by Canon Daniel, a work which those who desire to have a complete annotated edition should procure, the following passage is quoted from the '*Essay on the Understanding*,' by Locke—'With the history he may also do well to read the ancient lawyers, such as Bracton, *Fleta*; Henningham, *Mirror of Justice*; my Lord Coke's *Second Institutes* and the *Modus tenendi Parliamentum*; as also, I suppose, in Sedler's treatise of *Rights of the Kingdom* and *Customs of our Ancestors*, wherein he will find the ancient constitution of the Government of England.']

Publications Reviewed.

We have received from Messrs. Blackie and Son, Thomas Nelson and Sons, and the National Society, parcels of this year's Prize Books, full particulars of which will be found in the List of Publications received (page 420). We hope to give full notices of each in our next issue.

Relfe Brothers' School and College Examination Arithmetic, by John Bowick, B.A., LL.D., &c. London: Relfe Brothers.

Of making many Arithmetics there is no end, and much study thereof is a weariness to the flesh. Considering that in the latest issue of the Educational Catalogue (1887), there are fully 500 Arithmetics still in print, it may readily be questioned, whether, in this department, there is any 'long-felt want' for aspiring authors to fill. Dr. Bowick, however, is convinced that a book is wanted 'which can be used as an ordinary text-book in schools, and which at the same time is specially suited for candidates preparing for the various public examinations,' and this want he manfully sets himself to fill. The result is a well-printed, neatly arranged book, which, if it have no striking merits, has at all events no very glaring defects. It is well and strongly bound, and withal not unreasonably dear. The examples are numerous, nearly 4000, and appear to be carefully selected and well graduated. In cases where we have tested the answers (which are given complete at the end of the book), we have found them to be accurate. All the ordinary rules are fully treated, including even, though very shortly, that curious fossil relic of bygone ages, 'Equation of Payments.' The figures under the head of 'The Metric System' are unfortunately given with varying degrees of accuracy. A metre is given correctly to its fifth decimal of an inch, but it is stated that ten millions of them make up the Earth's quadrant. This, of course, was the intention, but the then knowledge of the Earth's dimensions was so inaccurate that this involves a considerable error. The length of the quadrant of the Earth, passing through Paris, is now

estimated at 10,001,472·5 metres. A gramme is given as 15·4440234 grains. We cannot find any authority for this. The determination of Prof. Miller in 1844, was 15·43234874 grains, while a more recent determination (1884), gives 15·43235639. We think that the figures 15·432 should be retained, and they have the advantage of being remarkably easy to remember. The useful rule of thumb, that 1 litre = 1¾ pints, should have been given.

'Special attention has been given to Commercial Arithmetic' under which, vaguely mysterious term appears to be included little more than Exchanges and Foreign Money. This latter department, unfortunately, needs that the author should give special attention to it. The coinage assigned to Norway (rix dollars and shillings) has been out of date since 1875, when the Scandinavian Union (Denmark, Sweden, and Norway) adopted a common unit, the *krone*, somewhat foolishly translated by our author as a 'crown-dollar' which scarcely suggests the fact that its value is about one shilling. Under the head of Germany we have a 'pfenning' (!) mentioned, we will hope by misprint.

We come into irreconcilable disagreement on the question of Proportion. Here the Unitary Method is assigned to a far more subordinate position than we think right. This journal has several times insisted upon the prime educational value of this method (Practical Teacher, Vol. I., p. 506 and *passim*), and we believe that on this point we carry every true teacher with us. The old cabalistic dot method *might* be understood when it was worked correctly, but need not be. This *must*. Every sum worked out by Unitary Methods is as valuable a Mental Exercise as even a proposition in Euclid and in a subject such as arithmetic, whose mental value is of the smallest, we ought therefore to retain it most tenaciously. It is our own belief and experience as teachers, that to allow even that abbreviation of this method, which is called 'the fractional method,' is highly detrimental, and we hold that dots should be banished to Euclid or beyond.

We have not conveyed, as we could have wished, our sense of the painstaking care and general accuracy of the book, and in conclusion can only say that if any of our readers are in want of an arithmetic, while we cannot conscientiously say that this is, in our judgment, the best on the market, we believe that they will not be disappointed in it.

Manual of Swedish Drill. By George L. Melio. London: Sampson Low, Marston, Searle and Rivington.

Teachers will be glad to have this illustrated manual of Swedish drill. It contains a limited number of Ling's exercises (which can be performed without any apparatus) designed to develop equally and properly the muscles of the various parts of the body. As each lesson is accompanied by an illustrative diagram of the terms used and the positions assumed, no difficulty will be experienced in following the various directions given. Physical training of a systematic kind is an essential in education, and a course of exercises similar to those of which this book is the exponent, will be of great service to children of both sexes. At the same time the exercises will form a great attraction at school entertainments.

Picturesque Geography. By G. W. Bacon. London: G. W. Bacon and Co., 127, Strand.

'Picturesque Geography' is a series of twelve pictures printed in oil colours and sold in sheets for framing, or mounted on boards. They are works of art, many being representations of nature in various parts of the world. The series meets in a twofold way the requirements of the times, for the pictures not only serve the purpose of art decoration, but form admirable illustrations of physical geography for any Standard. Mr Bacon has written a little pamphlet of twenty-four pages to accompany the pictures, and the descriptions it contains may form the basis of as many object lessons as there are pictures. The series is reasonable in price as well as excellent in quality.

Vere Foster's Copy Books. Bold Writing Series. No. 18. London: Blackie and Sons.

The latest addition to this useful series of copy books is one containing models for book keeping. It contains specimens of invoices, statements, day-book. journal, and ledger accounts, and balance sheet. A lad who can show ability to turn out work similar to that set before him here will be an acquisition as a junior clerk in any office where neatness and precision of work are required. The style of writing is of the same character as the previous numbers of the series, made suitable for compression in the pages of a merchant's books.

Ablett's Drawing for the Standards. Book II, Parts 1 and 2. London: Blackie and Sons.

These numbers comprise the requirements of Standard V. in model drawing. They are carefully prepared and marked by all the practical skill displayed in the preparation of the other numbers. In schools which cannot afford to place a book in the hands of every pupil, these numbers will be very useful to teachers, containing as they do a series of progressive exercises in this difficult part of fifth Standard work.

The Child's Bible Expositor. By S. E. Scholes. London and Manchester: John Heywood.

A pleasantly written Scripture history in the form of question and answer. It deals principally with the Old Testament Scriptures, four fifths of the book being devoted to them. We do not think it at all necessary to have marred the general acceptability of the book by the uncharitable assumption respecting the 'man of sin' on page 188, or 'anti-christ' on page 189. Without taking from its general efficiency, these definitions might very easily be deleted in the next edition.

The Infant Action Song and Recitation Book. Part V. By Mrs. Hibbert. London: J. Marshall and Co.

Mrs. Hibbert has added another part to her admirable book for infant schools. The present part contains forty-seven songs with music, recitations, and ditties for the babies. The selection has been made with all the care of an experienced, practical, infants' mistress, whose judgment has been verified by the actual testing of all the pieces inserted. It will take a teacher a long time to get through the 240 pieces contained in the book, so that neither songs nor recitations need become stale from too frequent use. Many of the pieces are suitable for first Standard children as well as for infants.

A Treatise on Spherical Trigonometry. By John Casey, LL.D., F.R.S., &c. Dublin: Hodges, Figgis & Co., London: Longmans, Green, & Co.

Prof. Casey has again rendered a real service to Mathematical Science by the publication of this treatise. We took the opportunity of welcoming the appearance of his *Sequel to Euclid*, and his *Plane Trigonometry*, and, indeed, were among the very first to discern those substantial merits in the former treatise which have since carried it through five editions. The need for a Spherical Trigonometry is not, perhaps, quite so great as was that for a Plane Trigonometry, for the admirable treatise of M'Clelland and Preston is in the field. Prof. Casey's great advantage here, as in his previous works, is in his examples, which are very numerous, 'over five hundred' he tells us, and form, in our judgment, very far the best collection of examples on this subject which has yet appeared in print. Some of them are of singular elegance, and all are interesting and profitable. In our author's *Plane Trigonometry* there was one grave fault which has, in our experience, largely hindered its usefulness as a class text-book and that is, that the examples were inaccurately printed and badly graded. We have given particular at-

tention to these points in the present book and believe that there is little or no complaint to be made on this score.

We have one or two criticisms upon details to offer. Fig. 10 on p. 16 is surely wrong, for CAF is a great circle and in no conceivable projection can this become, as it appears to do here, a curve having a cusp at A. Is not the phrase 'the area of a great circle,' on p. 17, unnecessary and dangerous? Should not the phrase 'analogies' be confined to those formulæ in Spherical Trigonometry which are more or less analogous to formulæ in Plane Trigonometry? The extension of it to Reidt's Formulæ seems to us a little too liberal. On the debateable question of the Napier Mnemonic Rules we differ *in toto* from Prof. Casey. He suggests that the formulæ for right-angled triangles should be learnt from their plane analogues. Thus from $\tan A = a/b$ he would have us infer $\tan A = \tan a/\sin b$. We believe that, with certain modifications, the Napier Mnenonics are among the most useful specimens of their class. The student should learn to associate the parts, a, b, $\frac{\pi}{2} - A$, &c., not with a pentagon or a circle, or any figure that has to be drawn specially for the purpose, but with the actual triangle under treatment; *i.e.*, in dealing with a right-angled triangle he should learn to replace every part by its complement, except those two parts that run up to the right angle (and therefore may mnemonically be supposed to have already enough to do with $\pi/2$). Then the formula is learnt thus:—

sin m*id.* = prod. c*os* *opp.* = prod. t*an* *adj.*

and if the correspondence between the italicised letters is pointed out, all our experience supports us in saying that the student will have absolutely no difficulty.

A full index is, we are glad to see, provided. Why do our great Mathematical publishers, Messrs. Macmillan, so rarely give us this gratification? We select, in conclusion, a few of the rarer headings from this Index to show the scope of this remarkable treatise—Breitschneider's Analogies; Reidt's Analogies; Astronomy, definitions, exercises and problems; Brünnow's Theorems; Hart's Circle; Lexell's Circle; Isogonal and Isotomic Conjugates; Homothetic figures and points; Anharmonic Ratio; Staudtians, &c. We commend a book so lavishly provided with treasures to the attention of every serious mathematical student.

Chambers's Examination Book-keeping. By John Bell, LL.D. M.A. London and Edinburgh: W. and R. Chambers.

We are decidedly of opinion that no candidate for a 'Commercial Certificate,' or for a post in the Civil Service in which book keeping is an essential subject, can well afford to be without this book. It answers almost every conceivable question in the subject; it gives specimens of various methods of keeping the different books; it deals exhaustively with the most difficult part of book keeping—journalising. It points out how and when errors and frauds of various kinds can be detected, and it contains the solutions of seventeen examination papers of the Civil Service, Society of Arts, City of London College, and College of Preceptors, besides a chapter on Government book-keeping. It treats of both the theory and practice of the subject, and no candidate need fear entering any examination room who has mastered its contents. We very cordially commend it to the notice of teachers and students.

Chambers's Expressive Readers. Book IV. London and Edinburgh: W. and R. Chambers.

This book is as good as its predecessors in the same series. It has capital stories and descriptive pieces, a good selection of poetry for reading and recitation, twenty pages of grammar lessons, lists of words, besides exercises in word building and on the use of words, and dictation and grammar exercises to every lesson. The printing, illustrations and binding are all good, while the moral sentiments inculcated in the lessons are all that could be desired.

Xenophon's Hellenica. Book II. With Analysis and Notes by the Rev. L. D. Dowdall, LL.B., B.D. Cambridge Text with Notes Series.

This is a useful edition of a book much read in the middle forms of English schools, yet which has till lately been undeservedly neglected, as far as editing for school purposes goes. The historical interest of the Hellenica flags a good deal in the later books—but in the second book it is at its highest; and the liveliness and swing with which Xenophon tells the story of the fall of Athens, and the reign of the Thirty, and the deliverance of his country by Thrasybulus, wins for him a high place even among the great writers of Greece. Mr. Dowdall has done his work with a care and thoroughness which contrast agreeably with the slovenly work which is sadly too common in such editions of even classical authors. The analysis ought to be helpful to the schoolboy: but we fear it will lose some of its effectiveness by its being placed apart from the text. Out of a boy's sight is mostly out of his mind. Here and there an omission strikes the eye in the commentary. There is no note on the forms δεικνύων in ch. 1, s. 11, and συνέθηκαν in ch. 3, s. 20. Some explanation of the change of mood in μεθορμίσαι (ch. 1, s. 25), such as is given of the converse process in στρατηγεῖν just below, is advisable; and of the change of voice in πολιτένσοίντο (ch. 3, s. 11) as compared with πολιτεύσουσι in s. 2. Mr. Dowdall is, we think, wrong in his translation of σύνθημα (ch. 1, s. 2) by 'concerted plan:' does it not rather mean the signal agreed on by the conspirators, *i.e*, the carrying of the reed. In ch. 1, s. 14, it would be better to explain φιλίας as a genitive of respect after ἔιχε than as a genitive (partitive?) after ὡς. The long sentence in ch. 3, s. 15 and 16, is, we think, wrongly analysed: it seems pretty clear that the introduction of the tardy principal clause is marked by the ὁ δὲ with which s. 16 begins, and not, as Mr. Dowdall explains it, by the ὁ δὲ Θηραμένης some lines before. We have noticed a clerical error—Agnon for Hagnon—fn the note on ch. 3, s. 30, and the omission of the number of section 16, ch. 1 (notes). It would have made the notes much easier of reference if the section numbers had been printed in leaded type: and the [ch. 1.—1-4] placed in the top margin of each opening of the pages of the notes are a printer's carelessness, which should be rectified.

Concise German Grammar in Three Progressive Courses: III. Advanced Course. By Fr. Lange, Ph.D. London: Whittaker and Co.; G. Bell and Sons.

We are told in the preface of this third volume of the series that it is specially designed for the use of pupils at the High Schools, and for students who are reading for examinations like the Higher Local Cambridge and the Modern Language Tripos, where questions are set on philology, as well as on accidence and syntax. We sincerely hope, for the credit of these examinations, that candidates who have no other knowledge of philology than what is given in this course, will be ploughed, for the 16 pages on philology, given at the end, contain nothing but the results of the subject boiled down to the very bones. Such a skeleton must be very indigestible, and can produce nothing but cram. It is as if one attempted to study chemistry by learning off a collection of chemical equations. But, perhaps, the author may know the nature of these examinations better than we, and he may have accurately gauged their scope. We might pick a similar quarrel with regard to the first chapter, in which an historical sketch of German literature is given in the modest limits of two pages. Likewise, the wholé subject of phonology, including the physiology of speech, is comfortably polished off in less than five pages. When we come to the well-worn subjects of accidence and syntax proper, we feel under our feet a much more

solid ground. No undue condensation has been allowed to interfere with the paramount utility of this part. The practical student will find it, on the whole, a very satisfactory account of what he is most concerned to know. Occasionally there is a lack of proportion in the different parts, and one or two points which, on going straight through the book, we found treated inadequately, we were surprised to light upon in an amplified form in one of the six appendices. This is the case with the government of the prepositions, which surely deserves a place in the bulk of the book. The chapters on word-building, on the government of adjectives and verbs (this latter also relegated to the appendix, for no apparent reason), are among the best. A great deal of space is devoted to the verbs with separable prefixes, in singular contrast to the short treatment of the verbs which differ in meaning according to their having a separable or an inseparable prefix. A gallant, but not uniformly successful, attempt is made to explain the shades of meaning which the model adverbs *schon*, *doch*, *noch*, *wohl* throw over the German sentence. The chapter on the use of the tenses is conventional, but it will not enable the student to avoid all the pitfalls which lie in that direction in German. In dealing with the order of the words the author has departed from the usual division of sentences into *simple*, *compound*, *and complex*, in order to adopt a division of his own which is incorrect, and afterwards needlessly entangles his rules on the order of the words. He divides sentences first into *simple* and *compound*, and then says, 'a compound sentence is a combination of two or more clauses, forming together a complete whole. It may be *co-ordinate* or *subordinate*;' *i.e.*, John is out and I am in, he calls *a co-ordinate*, and, John has the book you are looking for, *a subordinate sentence*. Subordinate to what? Curiously enough, a little further, at p. 259, we read of *subordinate clauses*, which, of course, is perfectly correct. This error at the outset, as well as the fact that pure conjunctions are treated as integral parts of the clause they introduce, has rendered this chapter the least satisfactory in the book. A useful list of German idioms is given in Appendix I., but the translation of several of these is not given in vernacular English. '*He came off with a black eye, We came off clear, The invalid has become bed-sore, We were within a little of being killed*,' &c.' suggest nothing racy of the soil.

Shakespeare's Merrie Meeting: a Juvenile Dramatic Cantata. By Robert Canthony and Thomas Murby. London: T. Murby.

In this Cantata Mr. Murby worthily sustains his reputation as a writer of high-class, yet tuneful, music for children. All necessary directions for costumes, action, &c., are given, and the work promises to be exceedingly effective in performance.

The melodies throughout the work are very graceful and pleasing; and the harmonies well varied. There are, however, a few unusual progressions, not always of the happiest effect: *e.g.*, the progression from the 2nd inversion of the dominant 7th to the chord of the subdominant, page 1, bars 2 and 3; the consecutive 2nd inversions, page 1, score 3, bars 3 and 4; and the leap from the bass with false relation of F sharp and F natural, page 1, score 5, bars 4 and 5.

As usual, the typographical arrangements are excellent.

An Elementary Class Book of General Geography. By Hugh Robert Mill, D.Sc., F.R.S.C. London: Macmillan and Co.

This is one of the series of Geographical text-books, edited by Archibald Geikie. The aim, as the author tells us, is to give a brief account of the earth as the dwelling place of mankind. The descriptions proceed from the general to the particular. Chapter I. describes the general principles on which geography depends; Chapters II. and III. give the outlines of physical geography; the remaining Chapters give a more detailed description of the continents. The order of exposition is natural; mountain chains are connected with rivers and rivers with plains; the salient points of a nation's history are cited to explain how the struggles and migrations of races have gradually produced the existing people and determined the actual boundaries.

The work is original in exposition, and in many respects a great advance upon the text-books in general use. The question whether it will be generally adopted depends upon how far the desire to give a new character to geographical teaching has taken hold of the Examiners. Much rests with them. So long as a definite syllabus is adhered to, and a certain line of enquiry followed, so long will the books that supply that information continue to be used. With a more rational conception of geography the old sort of questions will gradually disappear, and the old text-books with them. Dr. Mill has written a most readable and instructive geography of the world in 350 pages. This is praise and recommendation enough.

Excellent, the 'Grind-e-lay' of a First-Class C.M. By Thomas Murby. London: T. Murby.

This song, presumably for a Tenor or high Baritone voice, is dedicated to the *overworked and underpaid* of the profession. It is serio-comic in style, and the music (occasionally lugubrious) goes well with the words and general sentiment.

Musical critics will probably object to the song beginning in F Major and ending in D Minor.

The A flat on page 6, score 3, bar 6, should be written G sharp.

First Grade in Inorganic Chemistry. By T. Ward, F.C.S. Manchester: John Heywood.

The author has here attempted to give a book which will be useful for those preparing for elementary examination in Inorganic Chemistry. The book is abundantly illustrated, though the illustrations themselves are a little wanting in finish. A good many questions are appended to the lessons, and directions are given for performing the experiments.

The book is clearly written, and will be found a useful class book for the elementary stage of the South Kensington Syllabus, and similar examinations. There is nothing very original about the work, either in the matter or the presentation; nor does the subject now allow of it. We have no doubt that a skilful teacher would find this book suitable for his pupils as one in which they would find many facts which he would have to pass over in his teaching. They would also be able to read in it all that they need know for the purposes of their examinations.

Musical Drill: Part II. By R. H. McCartney. London: George Gill and Sons.

We have previously reported favourably on Part I. of this series, and Part II. is equally good. The illustrations are excellent, and the music suitable. The 'get-up' of the book is attractive, the type being bold and clear, and the general arrangement very effective.

Each exercise occupies one opening of the book, the verbal directions and illustrations being on the left hand page, and the accompanying music on the right. Teachers will find this work a very valuable handbook.

Modern School Reader for Standards VI. and VII. London: Cassell and Co.

The revised edition of this reader contains upwards of 250 pages of matter of a character well suited to the purpose intended. The lessons are varied and interesting. A love of nature and of deeds of courage and heroism in every walk of life is inculcated in many of the lessons, while other chapters contain information on common things, good advice on studies and books, historical and other sketches. There is not a dull page in the book, which is well bound, clearly printed and suitably illustrated.

The Candidate in Music. By Henry Fisher, Mus.Doc. London: J. Curwen and Son.

This book is one of a type with which every reviewer must be familiar by this time. It contains absolutely nothing that is new, either as regards the matter, which being of an elementary nature could not indeed be expected to be otherwise than old, or by its presentment, which is conventional. It is professedly an examination book, as will be seen from the following sentences taken from the preface: 'Some examinations include only the more elementary portions of the rudiments of music, rejecting such things as the C clef, compound time, minor scales and chromatic intervals. It will be found that each chapter has been so planned as to meet these restrictions, and that careful selection of the needful paragraphs will guard the student against unnecessary labour.' If there be any whose vaulting ambition it is to become musicians on the G clef and in single time only, innocent of the minor scales and chromatic intervals, they ought to lose no time in acquiring the book. All they have to do is to 'select carefully the needful paragraphs' and thus 'guard themselves against unnecessary labour.' No wonder the author is a great advocate of the examination system, and is very wroth in his preface with some nameless being who 'some time ago made a tremendous onslaught on it.' Much of that protest is devoted, he says, to matters which are pure figments of its writer's brain. 'He appears to have taken a delight in conjuring up bogies for the sake of demolishing them, &c.' Mr. Fisher winds up by stating that he has no hesitation in saying that it (the collective opinion of the persons who signed the protest) cannot stand for an instant against the matured views of half-a-dozen experienced principals of schools, or visiting masters in large practice. It never seems to have struck our author that schoolmasters are not the best judges in a question of this kind. They are too much like the 'dyer's hand, subdued to what it works in.' As in every other profession, intelligent lookers-on often see a great deal more of the game than those who play it.

The Annotated Liturgy. Edited, with Introduction, by Rupert Garry. London: Hatchards.

The well-known fact that many clergymen read badly, and the reflection that they especially ought to read well, might pass with much less laboured proof and quoted comment than the introduction to this little work sets before us. At the same time it contains some useful suggestions for the improvement of reading.

The body of the book consists of the Orders for Morning and Evening Prayer, the Litany, Collects, and other forms in the English Book of Common Prayer. These are carefully marked for pause and emphasis. Foot notes occur frequently, their purport in most cases being to warn against common mistakes in the mode of reading certain passages. Archaic words and others which have changed their meaning are also explained. The book will probably be of service to such as need its help and are willing to admit that need.

A Phonographic and Pronouncing Dictionary of the English Language. By Isaac Pitman. London: Isaac Pitman and Sons.

The various abbreviations that form part of the system of Phonography result in many cases in the possibility of writing the same word more than one way. At the same time one outline will probably be, as a rule, more convenient and more easily made than the variation. It is useful in such cases to have the best form settled once for all. This, we take it, constitutes the special advantage to shorthand writers of such a work as this. Reference to words about which they may be in doubt will solve their difficulty, and enable them in future to accomplish their work more speedily. The volume is produced in an admirable manner. The outlines are given in the corresponding style, and are very neatly executed. The number of words dealt with is about 60,000, including more than 5,000 proper names.

THE TOWNLEY DIVISIONAL MAPS OF EUROPE.

THESE Maps possess the following advantages:—

The absence of all unnecessary detail. Only those places are shown which it will be useful for the scholar to remember, thus making the Maps simple, clear in outline, and visible from a considerable distance.

Towns are indicated by black circles of sufficient size to be seen by all the scholars in the class.

The names are printed in very small type; they can thus be read only by the teacher. It is, therefore, unnecessary for him, as with the common test Maps to "cram" the lesson beforehand, or to have constant recourse during its progress to an atlas or other work of reference.

ARRANGEMENT OF THE SERIES.

1. **France.**
2. **Spain and Portugal.**
3. **Germany.**
4. **Italy.**
5. **Austria-Hungary.**
6. **Holland and Belgium.**
7. **Norway, Sweden and Denmark.**
8. **Switzerland.**
9. **Turkey, Greece, and the Danubian States.**

Size, 40 inches by 30 inches.

Mounted on Rollers and Varnished.

Price THREE SHILLINGS Each.

Specimen Section, Post Free.

'For class-room teaching they will prove valuable and equally so as a test map.'—*Schoolmistress.*

Complete Catalogue of Educational Works on Application.

A. G. DAWSON, 14, IVY LANE, PATERNOSTER ROW, LONDON, E.C.

BRITISH MUSEUM 1 NOV 88

TO HEAD MASTERS.

See that your boys learn 'Pitman's Shorthand.'

Of inestimable value to those seeking appointments.

'The best system of shorthand.'—*Daily News.*
'Simple in character and based on scientific principles.'—*Practical Teacher.*
'Beautiful, fascinating, and efficient.'—*School Board Chronicle.*

Taught in over 1,000 Schools, Colleges, Institutions, &c.

Including Rugby, King's College, Haileybury, &c., &c.

THE PHONOGRAPHIC TEACHER,' 6d. 1,370,000 COPIES SOLD.

Descriptive Pamphlet and Catalogue post free.

Specimen Copy of 'TEACHER' Free to Head Masters.

Any further information readily given.

ISAAC PITMAN & SONS, 1, Amen Corner, E.C.

AND ALL BOOKSELLERS.

CITY OF LONDON DAY TRAINING COLLEGE.

WHITE STREET, MOORFIELDS, E.C.

(Two minutes' walk from Moorgate Street Station, 5 from Broad Street, Liverpool Street, and the Bank.)

CERTIFICATE, 1889.

SCHOLARSHIP, 1890.

PUPIL TEACHERS' CENTRAL CLASSES.

These Classes resume work after the holidays, on SATURDAY, 24th August.

SCIENCE AND ART CLASSES

Begin third week in September.

All the Classes in Science and Art are free to those who either are, have been, or will be, Students in the Certificate, Scholarship, or Pupil Teachers' Classes.

Tuition by Correspondence for all Examinations.

All applications to be addressed to PROFESSOR CUSACK, the Principal, as above.

J. KEEFE, F.R.G.S., F.S.Sc. (London), &c.,

63, BOLD STREET, LIVERPOOL; also at MANCHESTER.

ACADEMY for Civil Service Clerkships, Naval Cadetships, Engineer Students, Ceylon and Hong Kong Cadetships, Army Preliminary, and Factory Inspectorships; also for Banks, Business, Medical and Legal, Preliminaries, and all Professional Examinations. Over 450 successes. TUITION BY CORRESPONDENCE for Country Students.

Prospectus Free.

The 'Practical Teacher' Sale and Exchange Column.

For Sale.—Copy-books, cheap; 4½ doz. Standard II.; 4 doz. Standard I. (Empire), quite new; whole sent carriage paid for 6s. 6d.; Dr. Clyde's 'Geography' (1s. 6d.), 9d.; Barnard Smith's 'Arithmetic' (4s. 6d.), 2s.; Barnett's 'Making of the Home' (1s. 6d.), 6d.; Morrell's Grammar' (2s. 6d.), 1s.; 'How to Earn Merit Grant,' Part I. (3s.), 1s.; all new. Wanted.—Key to B. Smith's 'Arithmetic,' and Key to Morrell's 'Grammar.'—Miss Wilson, Devonshire House, Middlesbrough.

SCHOOL PRIZES.

JOHN DAVIS,

ARCTIC EXPLORER AND EARLY INDIA NAVIGATOR.

By CLEMENTS R. MARKHAM, C.B., F.R.S.

300 pp., crown 8vo. 16 Original Illustrations and 12 Maps.

Price 3s. 6d.

FORMING THE FIRST VOLUME OF

'THE WORLD'S GREAT EXPLORERS AND EXPLORATIONS.'

Edited by J. SCOTT KELTIE, Librarian Royal Geographical Society; H. J. MACKINDER, M.A., Reader in Geography at the University of Oxford; and E. G. RAVENSTEIN, F.R.G.S.

'Sound, interesting, and useful matter for the very readers whose attention is too often spent upon books of no literary merit and devoid of practical utility.'—*Record.*

'A genuine little prose idyll.'—*North British Daily Mail.*

'The story of an English worthy who manfully and doggedly held his own in the great days when there were giants in the land.'—*Manchester Examiner.*

TO BE FOLLOWED ON DECEMBER 1st BY

PALESTINE,

By Major C. R. CONDER, R.E., Leader of the Palestine Exploring Expeditions.

Uniform in size and price.

Detailed Prospectus of the Series may be obtained on application.

THE BEST RECENT ACCOUNT OF AFRICAN TRAVEL.

By JOSEPH THOMSON, Author of 'Through Masai Land.

504 pp., crown 8vo, handsomely bound in cloth, 9s.

TRAVELS IN THE ATLAS AND SOUTHERN MOROCCO.

A Narrative of Exploration.

Times.—'Apart from the distinct value of Mr. Thomson's volume as a contribution to our knowledge of Morocco, it is most attractively written. . . The book is got up with excellent finish and taste, and the seventy illustrations and two maps are themselves a valuable help to the story.'

Spectator.—'Mr. Thomson, a wilful as well as a dauntless explorer, justified the risks he ran by success; and his narrative of adventure gives us an exciting peep at the mighty Atlas, a very good idea of Southern Morocco, a stirring picture of the city itself, and graphic sketches of the Moorish, Jewish, and Berber races with whom he came in contact.'

Early in December.

Second Year of Issue. Enlarged to 350 pp., crown 8vo, cloth. Price **2s. 6d.**

THE EDUCATIONAL ANNUAL, 1890.

A handy reference to Public Schools and Colleges, containing a Review of the Position and Progress of Elementary, Intermediate, and University Education, including Miscellaneous Summaries on Educational Topics of general interest.

OPINIONS OF THE PRESS.

1889 EDITION.

'Our system of national education, as it exists at present, is fairly and fully described.'—*Athenæum.*

'A most useful book.'—*Saturday Review.*

GEORGE PHILIP & SON,

32, FLEET STREET, LONDON, E.C., and LIVERPOOL.

MANSFORD'S MATHEMATICAL WORKS.

By CHARLES MANSFORD, B.A.,

VICE-PRINCIPAL OF THE WESTMINSTER TRAINING COLLEGE.

Mansford's School Arithmetic. Price 4s. 6d.

The entire subject is logically arranged; and the explanations given indicate the proper methods of teaching the rules, and also present a convenient summary of the principal points to be remembered by the pupil.

The best methods of working are fully explained and illustrated, and the rules are printed at length and in different types. Most of the examples are taken from the Papers set by the Education Department during the past twenty years.

The *Schoolmaster* says:—'We can strongly recommend it to the attention of our readers.'

The *School Board Chronicle* says:—'The commercial part is as good from the practical point of view as the theoretical is from the scientific standpoint. It is a capital Arithmetic; novel, without being far-fetched or over-ingenious.'

Mansford's School Algebra. Price 1s. New Edition.

Is specially adapted for Pupil Teachers, and contains *full explanations* of the points likely to prove difficult to beginners. There are numerous original examples, especially in problems, which are carefully classified and graduated. *The relation of the subject to Arithmetic is kept constantly in view, and illustrated throughout.*

Adopted by the London School Board. New Edition.

Mansford's Algebra for Elementary Schools.

Price 6d.

Mansford's School Euclid. Books I. and II., Price 1s.

In this little Manual the propositions are so arranged as to bring out the relation of the several parts. Exercises and explanatory *notes* are appended to *each* proposition, and the diagrams have been specially engraved to show the distinction between the constructive parts and the data. A series of one hundred miscellaneous exercises, *classified according to the propositions on which they depend*, is given at the end.

Now ready, price 2s. 6d.

Mansford's Solution of Geometrical Exercises,

Explained and Illustrated. With a Complete Key to the School Euclid, and 100 Additional Examples.

This Key has been prepared specially for Teachers who use the School Euclid. It contains the Solution of all the Examples in the Text Book, and also of 100 Additional Examples, which are so arranged that a Teacher can select a suitable exercise for any proposition.

Mansford's Mental Arithmetic for Schools and Training Colleges. Price 1s. 6d.

The rules and examples are systematically arranged and graduated. Each page contains a single rule, with its proper illustrations and accompanying examples.

The miscellaneous examples contain a complete set of the Certificate Examination Papers in Mental Arithmetic, both for Male and Female Candidates, from the beginning. The Answers at the end may be relied upon.

LONDON: JOSEPH HUGHES, PUBLISHER, PILGRIM STREET LUDGATE HILL, E.C.

Catalogue sent free on Application.

EYRE & SPOTTISWOODE'S

Drawing Instruments,

WATER COLOURS, OIL COLOURS,

SETS OF GEOMETRICAL MODELS,

Small, Medium and Large.

Pencils, Crayons, Indian Ink, Brushes, Palettes, Slant Tiles, Dippers, Water Bottles, Drawing Boards, T-Squares, Set Squares, Drawing Paper, Canvas, Panels, &c., and Artists' Materials of every description.

LIBERAL TERMS FOR SCHOOLS.

HEYL'S ARTISTS' OIL COLOURS.

LIBERAL TERMS FOR QUANTITIES.

SOLE AGENTS FOR THE UNITED KINGDOM,

EYRE & SPOTTISWOODE,

LONDON—Great New Street, Fleet Street, E.C.

'QUEEN'S SCHOLARSHIP EXAM.'

Candidates thoroughly Trained by Correspondence. No Fee unless successful first time. Backward students made to pass, and bright ones pushed into First Class.—Addressed envelope for particulars, list of successes, &c.

GEORGE HENRY SPARROW, Forest Gate, London, E.

N.B.—This being the eighth year of coach, with increasing success each year, there is little fear of failure.

47th YEAR OF PUBLICATION.

USED IN THE LONDON BOARD SCHOOLS.

REDUCED FAC-SIMILE OF COVER.

WIGHTMAN'S ARITHMETICAL TABLE BOOK

NEW EDITION.

ENLARGED TO CROWN 16mo.

40 pages.

Many Million copies of this valuable little work have been sold.

MAY BE HAD OF

SIMPKIN MARSHALL & Co.; KENT & Co.; HAMILTON ADAMS & Co.;

OF THE PRINCIPAL SCHOLASTIC AGENCIES,

AND OF THE PUBLISHERS

WIGHTMAN & Co., 104 & 106, Regency Street, WESTMINSTER, LONDON.

DR. BEACH'S
DAILY WORKING AND EXAMINATION CARDS
(ARITHMETIC).

PRICE, ONE SHILLING PER PACKET.

The Series consists of packets for Standards II. to VII. inclusive, and a packet of **'Long Tots.'**

Standards II., III., & IV., contain Forty Cards each; V., VI., and VII., Thirty-two Cards each; and the 'Long Tots' Forty Cards.

The first two packets provide on each Card both 'Daily Working Exercises' and an 'Examination Test,' and in the next four packets there is a further Test especially suited to Girls. There are thus **590** separate groups of Exercises. **Two** copies of the answers are enclosed in each packet.

The 'DAILY WORKING EXERCISES'

I. Comprise all the Syllabus properly detailed and graduated.
II. Link together the work of the different Standards, the various Rules and Problems being so gradually introduced and of such a nature as easily to lead up to the higher rules.
III. Cover, Card by Card, a week's work, furnishing typical sums. The Head Teacher is thus much relieved, and the Assistant considerably helped;—and
IV. Afford continuous practice from Cards, commencing even immediately after the Scholar's promotion to a higher Standard.

The 'EXAMINATION TESTS'

I. Are compiled from an exhaustive and critical analysis of many hundred Departmental Tests.
II. Touch every required detail and run in the official groove.
III. Give due prominence and frequence to the *failing* points.
IV. Are properly and systematically varied;—and
V. Furnish separate exercises for Boys and Girls.

The 'LONG TOTS' are similar to, but easier than those used in the Civil Service Examinations, and are intended to be used in Standards IV. to VII. throughout the year; they provide a race course for a match against time, in accordance with the Code Regulation. '*The Inspector should* ALWAYS *require the Scholars of the Fourth Standard and upwards to add columns of pounds, shillings, and pence, in a specified time.*'

☞ **By working on the plan of these Cards, nearly cent. per cent. has been obtained for sixteen years.**

The Schoolmaster says:—'The series is one that can be strongly recommended to the practical teacher.'

LONDON: JOSEPH HUGHES, PILGRIM STREET, LUDGATE HILL, E.C.

The Practical Teacher.

A MONTHLY EDUCATIONAL JOURNAL.

To Subscribers.—The *Practical Teacher* is published on the 25th of every month. Price 6d.; post free, 7½d.; sent post free, three months for 1s. 11d.; six months, 3s. 9d.; a year, 7s. 6d.

P. O. Orders should be made payable at Chief Office.

Subscribers not receiving their copies regularly are respectfully requested to write to the Publisher.

It would save time and expense if subscribers when remitting would state exactly what numbers they wish to be sent.

To Correspondents.—All literary communications should be addressed, THE EDITOR OF THE PRACTICAL TEACHER, Pilgrim Street, Ludgate Hill, London, E.C.

Accepted contributions are paid for within twenty-one days of publication.

The Editor cannot return rejected MSS.; authors should therefore retain copies.

TO ADVERTISERS.

Approved, *prepaid*, advertisements will be inserted in the *Practical Teacher* at the following rates:—

	s.	d.
20 words or under...	3	0
Above 20 words and under 32 words	4	0
32 words and under 64 words	5	0
For every additional 10 words...	1	0

For an ordinary page	4 guineas.
For page facing matter	5 guineas.
For 2nd page of wrapper	5 guineas.
For 3rd page of wrapper	5 guineas.
For the page opposite the 3rd page of wrapper ...	5 guineas.
For the 4th (back) page of wrapper	6 guineas.
For the half page of front wrapper	3 guineas.

Parts of a page are charged at a slightly higher rate.—Special quotations will be given for a series of three, six, or twelve months.

Teachers Advertising for Situations.

	s.	d.
20 words or under...	1	0
For every additional 10 words...	0	6

☞ **Portfolios, fitted with elastic bands, for preserving twelve numbers of 'The Practical Teacher,' may now be had. Price 2s. 6d.**

Handsome cases for binding yearly volumes, price 1s. 6d.

New and Revised Editions.

Adopted by the London and Principal School Boards.

HUGHES'S SCIENCE READERS.

Edited by A. NEWSHOLME, M.D. (Lond.).

STANDARD III.	By R. BALCHIN.	Price	1 0
STANDARD IV.		„	1 3
STANDARD V.		„	1 6
STANDARDS VI. & VII. (in one volume)		„	1 6

Profusely Illustrated.

This new Series of Reading Books will be found exactly adapted to the latest requirements of the Code, and also to the Syllabus issued by the School Management Committee of the London School Board.

The Schoolmaster says:—'Mr. Balchin writes as a teacher who knows practically the various subjects to which he addresses himself, and is thoroughly capable of presenting them to children in an attractive fashion.'

The Board Teacher says:—'These nice little books are not merely collections of facts; they are sound text-books, which are calculated to teach young people to think. Their simplicity is not affected, yet they may be intelligently read by very young children. They are pleasant to read, and the indefinable "knack" of the trained teacher appears in every chapter.'

Mr. R. Wood, Bolton, writes:—'I thank you for your cleverly edited Science Reader. It is not above the heads of those for whom it is intended. It is bound to become a favourite.'

Mr. T. H. Hall, Newington, Trinity School, Swan Street, Trinity Square, S.E., writes:—'So far as I have examined the books, I think they are highly creditable to Author, Editor, Publisher, Printer, and Binder. They show evidences of great care throughout, and have been arranged by one who takes a thorough interest in the work of Elementary Science, and, what is not always the case, knows how to make his lecturers or readers interested too. They deserve a large sale, and I hope they may become highly popular.'

Mr. G. E. Coggins, The School, Cardington, Bedford, writes:—'I am very pleased with Standard III. Science Reader, which I have introduced into my School with success, and great interest to the children.'

Mr. James Pooley, Wheal Vor Board School, St. Breage, Helston, Cornwall, writes:—'I have gone through No. 1 Science Reader, and have no hesitation in saying that it is well put together, and peculiarly (in reference to the language used) adapted to children. It deserves a wide circulation.'

Mr. W. C. Napier, 14, Cressy Road, Landport, writes:—'They are admirable books the best for teaching Elementary Science that have yet been produced.'

London: JOSEPH HUGHES, Publisher,
PILGRIM STREET, LUDGATE HILL, E.C.

JOHN HEYWOOD'S EDUCATIONAL PUBLICATIONS.

LITERARY READERS.

'A well appointed set of School Books.'—*Scotsman.*

ISSUED IN TWO EDITIONS—ILLUSTRATED.

SCHOOL EDITION.

Designed as Reading Books for Standards IV., V., VI., VII. Crown 8vo. Cloth, 1s. 6d.
Edited, with Explanatory Notes, &c., for the use of schools, by ALFONZO GARDINER.

PRIZE EDITION.

Crown 8vo, Cloth, extra gilt, bevelled boards, printed on superior toned paper, 2s. No more welcome, instructive, or Valuable books, could be chosen as prizes.

SWISS FAMILY ROBINSON, by Herr Rudolph Wyss.

'Such a book in the hands of the young is a veritable mine of literary wealth.'—*Educational News.*
'Well prepared for the use of schools. . Forms an admirable reader for the upper standards, nicely illustrated. and well got up.'—*Teacher's Aid.*
'An acceptable present for a boy.'—*Literary World.*
'A welcome addition to every nursery library.'—*Manchester Examiner.*
'Woodcuts numerous . . Type good . . altogether excellent.'—*School Board Chronicle.*

TALES FROM SHAKESPEARE, by Charles and Mary Lamb.

'The editor has done his work in an appreciative and careful spirit.'—*Schoolmaster.*
'Forms an admirable reading-book for elementary schools. Most children who are taught by it will be able to read the dramatist himself.'—*Literary World.*
'A prettily-bound edition, printed in bold type, and profusely illustrated.—*School Board Chronicle.*
'Handsomely got-up in cloth, richly gilt, freely illustrated, and forms an admirable gift-book for either boys or girls. Teachers should make a special note of this cheap and handsome volume.'—*Teacher's Aid.*

HOUSEHOLD AND FAIRY TALES, by the Brothers Grimm.

'An excellent idea to vary the ordinary readings of the schoolroom by a selection of these well-known household tales. . . Should soon find its way into all elementary schools and children's libraries.'—*Bookseller.*
'Few stories to be compared with them either in point of literary merit or of general suitability for the reading of the young.'—*School Guardian.*
'We can do nothing less than commend it.'—*Schoolmistress.*
'Edited with excellent judgment.'—*Yorkshire Post.*
'Will simply delight the little boys and girls.'—*Ladies' Pictorial.*

THE TEACHER'S "VADE MECUM" SERIES.

Compiled by "A HEAD MASTER."

F'cap 8vo, Cloth. Price 1s. 6d.

FIFTY EXAMINATIONS IN GEOGRAPHY. From oral and written questions proposed by Her Majesty's Inspectors to Standards I. to VII. under the Present Code.

'Just the sort of book teachers should have on their desks. The examinations both test and instruct.'—*Educational News.*

F'cap 8vo, Cloth. Price 1s. 6d.

FIFTY EXAMINATIONS IN MENTAL ARITHMETIC. Selected from Examinations by H.M. Inspectors under the Present Code. Standards I. to VII.

'Contains a host of admirable rules. . . . It would be hard to produce a better little book in mental arithmetic.'—*School Board Chronicle.*
Ten minutes spent with the children daily in practice from its pages must produce the best results.'—*Teachers' Aid.*

F'cap 8vo, Cloth. Price 1s.

FIFTY EXAMINATIONS IN DICTATION & GRAMMAR Selected from Examinations by H.M. Inspectors under the Present Code. Standards I. to VII.

'A very valuable little work, should be obtained by all teachers.'—*National Schoolmaster.*
'The book is well printed, neatly bound, and reasonable in price.'—*Practical Teacher.*
'Thoroughly practical. . . . good tests.'—*Schoolmaster.*

F'cap 8vo, Cloth. Price 2s.

HOW TO PASS 90 Per Cent. AND EARN EXCELLENT.
By 'ONE WHO DOES IT.'

All the subjects examined upon by H.M. Inspectors are taken *seriatim.* The object to be aimed at by the teacher, so as to deserve the highest merit grant, is pointed out, and the plans and methods successfully adopted by the writer in his own school are fully explained. Every part of school work is amply touched upon, and the experience of twenty years is placed before young teachers in a thoroughly practical manner. The book is not a theoretical 'school management,' but a plain statement of *what to do and how to do it.*

THE TEACHERS' HANDBOOK TO THE CODE EXAMINATIONS.

Consisting of Examinations in English, Geography, and Mental Arithmetic.

GIVEN BY HER MAJESTY'S INSPECTORS TO STANDARDS I. TO VII.

Published in Six Books. Books I. and II., 6d. each. Books III. and IV., 9d. Book V. 1s. Book VI. (Standards VI. and VII.) 1s.

Each book is published in a handy form, and is complete in itself. The most recent questions are included, and numerous answers and helps are given to assist the teacher in thoroughly preparing his class for the Government examination.

The questions, which are selected from examinations held in all parts of the country, do not profess to *exhaust* the subjects, but will be found most *suggestive* to a painstaking teacher, preventing him getting into a groove and neglecting necessary parts of his work, since they place before him those parts of each subject which the inspectors consider to be important.

Write for Specimen Pages of New Publications.

JOHN HEYWOOD, Educational Publisher, Printer, Bookbinder, and School Furniture Manufacturer,
DEANSGATE and RIDGEFIELD, MANCHESTER; and 1, PATERNOSTER BUILDINGS, LONDON.

Post 8vo. Strongly bound. Price 7s.

CAREY'S

'GRADUS AD PARNASSUM.'

With the English Meanings. Recently Revised, Corrected, and Augmented by a member of the University of Cambridge.

London: Published by the Stationers' Company, Stationers' Hall, Ludgate Hill.

MADE WITH BOILING WATER.

EPPS'S

GRATEFUL—COMFORTING.

COCOA

MADE WITH BOILING MILK.

Tuition by Correspondence

ESTABLISHED 1871.

PUPILS may now be entered for Certificate (1st and 2nd years), Scholarship, Science and Art, Matriculation, A.C.P., and Musical Examinations.

Pupils for Certificate (2nd year men) may take the course for Mathematics only, if desired.

Scripture (for December and July), Languages, Special Subjects, Shorthand, Book-keeping, &c., from 10s. per quarter.

We draw attention to our Courses for Pupil Teachers, Army Schoolmasters and Mistresses, Civil Service Branches, Medical and Legal Preliminary, and to our new department 'Notes and Queries.'

Intending Students and Enquirers (for whatever subject or branch) should write at once to our Office, naming this paper.

Address, JAMES JENNINGS and Co., Tuition by Correspondence Office, Deptford, London.